ACS-2170

Intel Celeron N2930 Ultra Slim Fanless Box PC

User Manual

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Revision History

Reversion	Date	Description
1.0	2015/07/14	Official Version

Warning!_____

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Caution

Risk of explosion if the battery is replaced with an incorrect type.
Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

Disclaimer

This information in this document is subject to change without notice. In no event shall Aplex Technology Inc. be liable for damages of any kind, whether incidental or consequential, arising from either the use or misuse of information in this document or in any related materials.

Packing List

Accessories (as ticked) included in this package are:
☐ Adaptor ☐ Driver & manual CD disc ☐ Other._____(please specify)

Safety Precautions

Follow the messages below to prevent your systems from damage:

- Avoid your system from static electricity on all occasions.

- Prevent electric shock. Don‘t touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.

- Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

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Chapter 1 Getting Started

1.1 Features

- Intel Celeron N2930 (1.83GHz) Processor
- Fanless Design with wide temperature support (-20~60°C)
- Onboard 2GB DDR III 800 MHz, 4GB for option
- Wide Range 9~36V DC Power Input
- Ultra Slim Size, Thickness: 3.39 cm
- 1 x 2.5” SATAII HDD space, Easy Accessible

1.2 Specifications

System	
CPU	Intel Celeron N2930 (1.83GHz) Processor
Chipset	SoC
Memory	Onboard 2GB DDR III 800MHz (4GB for option)
IO Port	
USB	3 x USB 2.0 type A 1 x USB 3.0 type A
Serial/Parallel	1 x RS-232/422/485 DB-9, COM1 (Default RS-232) 1 x RS-232 DB-9, COM2
Audio	1 x Audio Jack
LAN	2 x GbE LAN RJ-45 by Intel 82574L
VGA	1 x VGA
Power	1 x 3-pin DC Power input terminal 1 x 2-pin connector for power on/off button
Storage Space	
Storage	1 x SD Card slot, up to 32GB 1 x 2.5” SATAII HDD bay (Easy Accessible)
Expansion	
Expansion Slot	1 x mini PCIe slot (full size)
Power	
Power Input	9~36V DC

Power Consumption	MAX: 11.9W
Mechanical	
Construction	Silver Aluminum Chassis
Chassis Color	RAL 9007
Mounting	Wall Mount, VESA Mount 100 x 100
Dimension	297 x 173 x 33.9 mm
Net Weight	1.6 Kg
Environmental	
Operating temperature(°C)	-20~60℃
Storage temperature(°C)	-40~85℃
Storage humidity	10 to 90% @ 40°C, non- condensing
Certification	CE / FCC Class A
Operating System Support	
OS Support	Windows Embedded 8.1 Industry Pro Win 7 Pro for Embedded WES7 WE8S

1.3 Dimensions

Standard

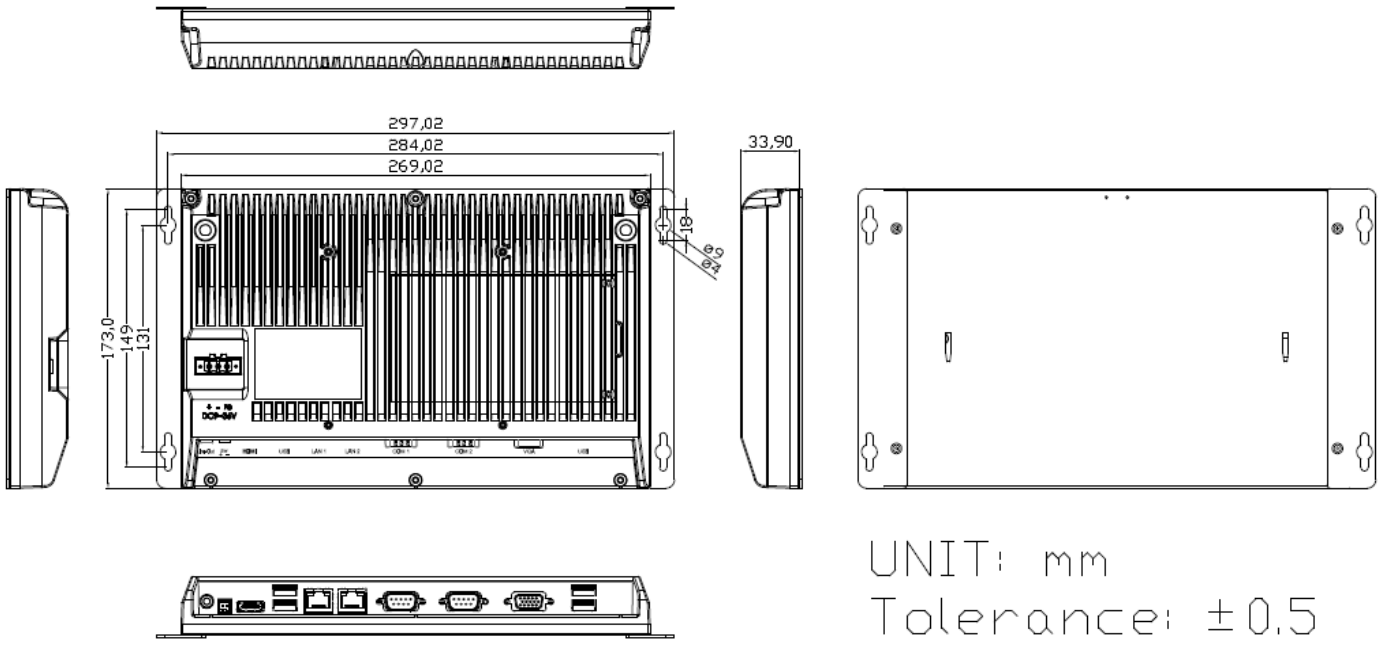


Figure 1.1: Dimensions of ACS-2170

Din Rail

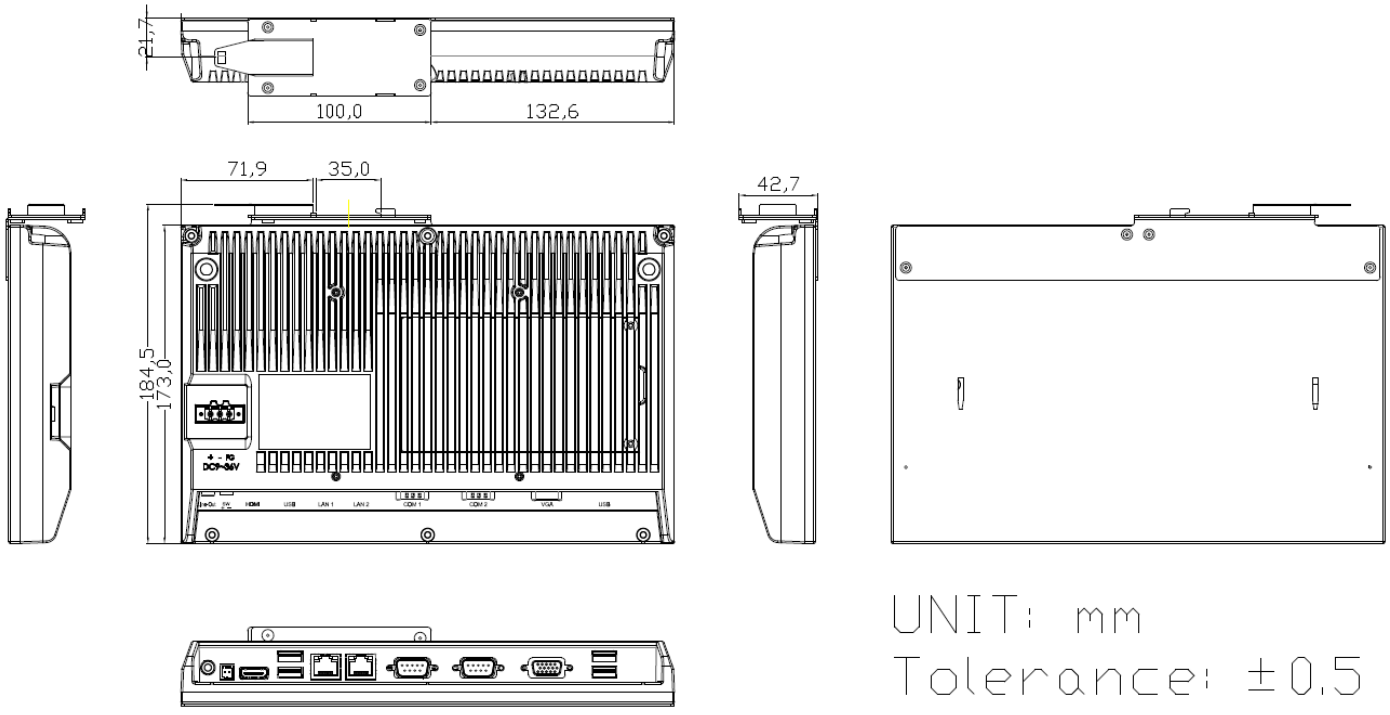


Figure 1.2: Dimensions of ACS-2170 with Din Rail

1.4 Brief Description of ACS-2170

The ACS-2170 is a fanless Design high-efficiency thermal solution BOX PC, powered by Intel N2930 1.83GHz Processor CPU and supporting 2GB DDR3 800MHz onboard, 4GB is for option. It comes with 1 x VGA, 3 x USB 2.0 type A, 1 x USB 3.0 type A, 2 x COM Ports, 1 x Audio Jack, 2 x LAN, 1 x 3-pin DC Power input terminal, and 1 x 2-pin connector for power on/off button. It supports 1 x 2.5” easy accessible SATAII HDD space, 1 x SD Card slot up to 32GB, and 9~36V DC wide-ranging power input. It is ultra slim size designed and with wide temperature support from -20°C to 60°C. It is ideal for Industrial Automation, Factory Automation, Machine Vision, Process Control, Data Terminal, TI, Surveillance, etc. and running factory operations from small visual interface and maintenance applications to large control process applications. The ACS-2170 works very well along with any of our display series and it absolutely can provide easy way to perform control and field maintenance.

Figure 1.3: Overview of ACS-2170

Figure 1.4: I/O Side of ACS-2170

Chapter 2 Hardware

2.1 Mainboard Introduction

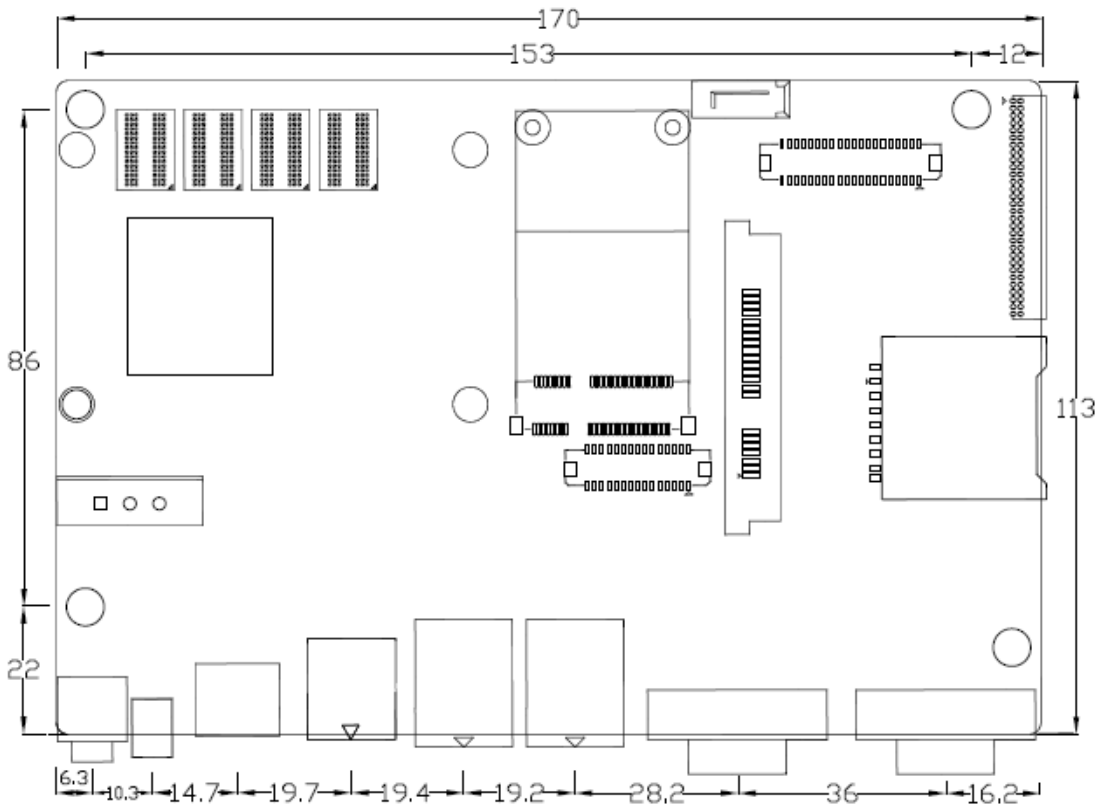
SBC-7111 is a 4" industrial motherboard developed on the basis of Intel Bay trail-I/M Processors, which provides abundant peripheral interfaces to meet the needs of different customers. Also, it features dual GbE ports, 3-COM ports and one Mini PCIE configuration, one VGA port, one HDMI port, one LVDS interface. To satisfy the special needs of high-end customers, CN1 and CN2 and CN3 richer extension functions. The product is widely used in various sectors of industrial control.

2.2 Specifications

Specifications	
Board Size	170mm x 113mm
CPU Support	Intel Bay Trail E3845 / 1.91GHz (4cores, 10W, onboard) Intel Bay Trail N2930 / 1.83 up to 2.16GHz (4cores,TDP/7.5W, option) Intel Bay Trail E3815 / 1.46GHz (1core, 5W, option)
Chipset	SoC
Memory Support	Onboard 2GB DDR3L SDRAM (E3845/N2930/E3815, option) Onboard 4GB DDR3L SDRAM (E3845/N2930, option)
Graphics	Intel® HD Graphics 542/792MHz (E3845) Intel® HD Graphics 313/854MHz (N2930) Intel® HD Graphics 400MHz (E3815)
Display Mode	1 x HDMI Port 1 x LVDS (18/24-bit dual LVDS) 1 x CRT Port
Support Resolution	Up to 1920 x 1200 for HDMI Up to 1920 x 1200 for LVDS (PS8625) Up to 1920 x 1200 for CRT
Dual Display	HDMI + LVDS HDMI + CRT LVDS + CRT
Super I/O	ITE IT8518E

	Fintek F81216AD
BIOS	AMI/UEFI
Storage	1 x SATAII Connector (7P) 1 x SATAII Connector (7P + 15P) 1 x SD Slot
Ethernet	2 x PCIe Gbe LAN by Intel 82574L
USB	1 x USB 2.0 and 1 x USB 3.0 (type A)stack ports (USBCON1/USB0,USB1) 1 x USB 2.0 Pin header for CN1 (USB3 or Touch, option) 1 x USB 2.0 Hub(USB2) 1 x USB 2.0 Pin header for CN2 (USB Hub /USB1) 2 x USB 2.0 Pin header for CN3 (USB Hub /USB2/USB3) 1 x USB 2.0 for MPCIE1 (USB Hub /USB4)
Serial	1 x RS232/RS422/RS485 port, DB9 connector for external (COM1) Pin 9 w/5V/12V/Ring select 1 x RS232 port, DB9 connector for external (COM2) Pin 9 w/5V/12V/Ring select 2 x UART for CN3 (COM3,COM4) 1 x RS422/485 header for CN2 (IT8518E/COM5)
Digital I/O	8-bit digital I/O by Pin header (CN2) 4-bit digital Input 4-bit digital Output 4-bit digital I/O by Pin header (CN3) 2-bit digital Input 2-bit digital Output
Battery	Support CR2477 Li battery by 2-pin header (BAT1/CMOS)
Smart Battery	1 x Smart battery Support 3 Serial Li battery by 8-pin header (BAT2)
Audio	Support Audio via Realtek ALC662-VD HD audio codec Support Line-in, Line-out, MIC by 2x6-pin header
Keyboard /Mouse	1 x PS2 keyboard/mouse by box pin header (CN3)
Expansion Bus	1 x mini-PCI-express slot 1 x PCI-express (CN3)
Touch Ctrl	1 x Touch ctrl header for TCH1 (ITE8518E/COM6) (JP4 setting： RS232 or USB 2.0)

Power Management	Wide Range DC9V~36V input 1 x 3-pin power input connector
Switches and LED Indicators	1 x Power on/off switch (BT1/BT2/CN2/CN3) 1 x Reset (CN2) 1 x Power LED status (CN1) 1 x HDD LED status (CN2) 1 x Buzzer
External I/O port	2 x COM Ports (COM1/COM2) 2 x USB 2.0 Ports (stack) 2 x RJ45 GbE LAN Ports 1 x HDMI Port 1 x Stack audio Jack (Line out)
Watchdog Timer	Software programmable 1 – 255 second by Super I/O (Reserve)
Temperature	Operating: -20℃ to 70℃ Storage: -40℃ to 85℃
Humidity	10% - 90%, non-condensing, operating
Power Consumption	2V /0.80A (Intel Bay Trail E3845 processor with 4GB DDR3L DRAM) 12V /0.70A (Intel Bay Trail N2930 processor with 4GB DDR3L DRAM) 12V /0.60A (Intel Bay Trail E3815 processor with 2GB DDR3L DRAM)
EMI/EMS	Meet CE/FCC class A
TB-528CAN2	2 x CAN bus
	1 x SIM Card Socket
	1 x mini-PCI-express slot



(units :mm)

Figure 2.1: Mainboard Dimensions

2.3 Jumpers and Connectors Location

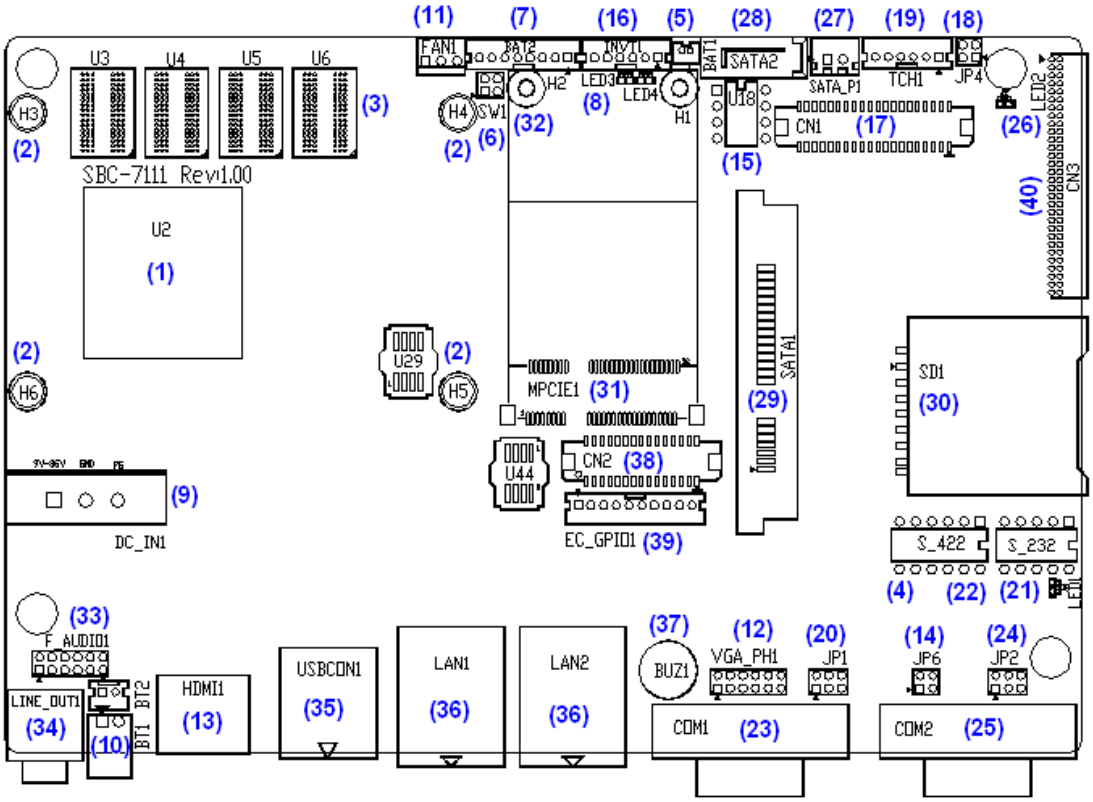


Figure 2.2: Jumpers and Connectors Location- Board Top

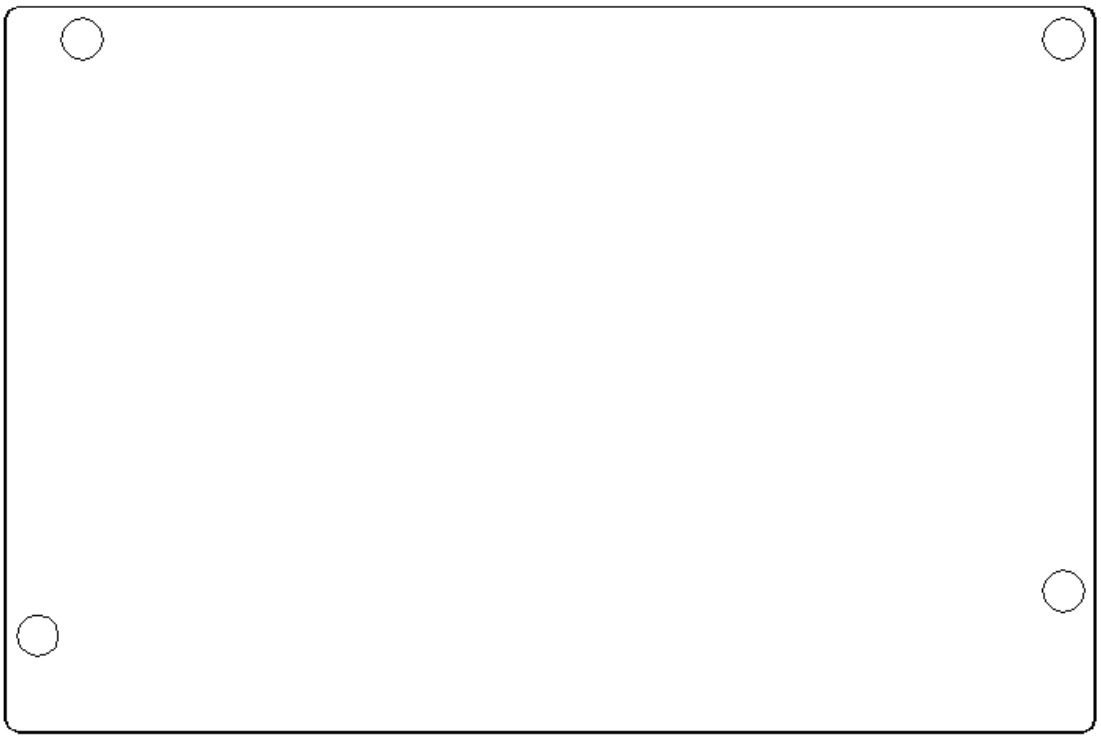


Figure 2.3: Jumpers and Connectors Location- Board Bottom

2.4 Jumpers Setting and Connectors

1. U2:

(FCBGA1170), onboard Intel Bay trail-I/M Processors.

Model	Processor				
	Number	PBF	Cores/Threads	TDP	Remarks
SBC-7111-E3845-2G	E3845	1.91GHz	4 / 4	10W	
SBC-7111-E3845-4G	E3845	1.91GHz	4 / 4	10W	Option
SBC-7111-N2930-2G	N2930	1.83 up to 2.16GHz	4 / 4	4.5 / 7.5W	Option
SBC-7111-N2930-4G	N2930	1.83 up to 2.16GHz	4 / 4	4.5 / 7.5W	Option
SBC-7111-E3815-2G	E3815	1.46GHz	1 / 1	5W	Option

2. H3/H4/H5/H6(option):

U2 Heat Sink Screw holes, four screw holes for intel Bay trail-I/M Processors Heat Sink assemble.

3. U3/U4/U5/U6:

(FBGA96)Onboard DDR3L Memory.

Model	Memory
SBC-7111-E3845-2G	2GB
SBC-7111-N2930-2G	2GB (option)
SBC-7111-E3815-2G	2GB (option)
SBC-7111-E3845-4G	4GB (option)
SBC-7111-N2930-4G	4GB (option)

4. S-422 (PIN6):

(Switch),ATX Power and Auto Power on jumper setting**.**

S-422(Switch)	Mode
Pin6 (Off)	ATX Power
Pin6 (On)	**Auto Power on (Default)**

5. BAT1 :

(1.25mm Pitch 1x2 Wafer Pin Header) 3.0V Li battery is embedded to provide power for CMOS.

Pin#	Signal Name
1	VBAT
2	Ground

6. SW1（NC）:

(2.0mm Pitch 2x2 Pin Header),Reserve.

7. BAT2（NC）:

(2.0mm Pitch 1x8 Wafer Pin Header),Reserve.

8. LED3/LED4（NC）:

LED3:Reserve.

LED4:Reserve.

9. DC_IN1:

(5.08mm Pitch 1x3 Pin Connector), DC9V~36V System power input connector.

Pin#	Power input
1	DC+9V~36V
2	Ground
3	FG

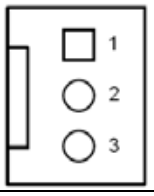
Model	DC_IN1
SBC-7111-E3845-2G	180°Connector
SBC-7111-E3845-4G	180°Connector
SBC-7111-N2930-2G	180°Connector
SBC-7111-N2930-4G	180°Connector
SBC-7111-E3815-2G	180°Connector
SBC-7111-E3845P-2G	45°Connector
SBC-7111-E3845P-4G	45°Connector

10. BT1/BT2:

Power on/off button, They are used to connect power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.

11. FAN1(option):

(2.54mm Pitch 1x3 Pin Header),Fan connector, cooling fans can be connected directly for use. You may set the rotation condition of cooling fan in menu of BIOS CMOS Setup.



Pin#	Signal Name
1	Ground
2	VCC
3	Rotation detection

Note:

Output power of cooling fan must be limited under 5W.

12. VGA_PH1:

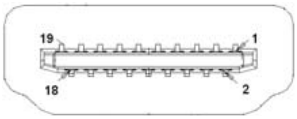
(CRT 2.0mm Pitch 2x6 Pin Header), Video Graphic Array Port, Provide 2x6Pin cable to VGA Port.

Signal Name	Pin#	Pin#	Signal Name
CRT_RED	1	2	Ground
CRT_GREEN	3	4	Ground
CRT_BLUE	5	6	VGA_EN
CRT_H_SYNC	7	8	CRT_DDCDATA
CRT_V_SYNC	9	10	CRT_DDCCLK
Ground	11	12	Ground

VGA hot plug setting for Windows XP:	
VGA1 (Pin Header)	Function
Pin4-Pin6 (Close)	VGA Simulation Disabled
Pin4-Pin6 (Open)	VGA Simulation Enabled
Use the 2.0mm jumper cap to close pin4 and pin6	

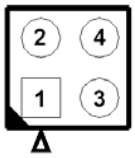
13. HDMI1:

(HDMI 19P Connector), High Definition Multimedia Interface connector.



14. JP6:

(2.0mm Pitch 2x2 Pin Header), LVDS jumper setting.



JP6	Function (CN1)
Pin1-Pin2 (Close)	Single channel LVDS
Pin1-Pin2 (Open)	**Dual channel LVDS (Default)**
Pin3-Pin4 (Close)	**8/24 bit (Default)**
Pin3-Pin4 (Open)	6/18 bit

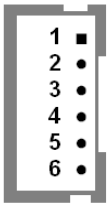
15. U18:

AT24C02-DIP8,The EEPROM IC（U18）is the set of LVDS resolution. If you need other resolution settings, please upgrade U18 data.

Model	LVDS resolution
SBC-7111-E3845-2G	1280*1024 (Default)
SBC-7111-E3845-4G	800*480 (option)
SBC-7111-N2930-2G	800*600 (option)
SBC-7111-E3845-4G	1024*768 (option)
SBC-7111-E3815-2G	1920*1080 (option)
	……

16. INVT1:

(2.0mm Pitch 1x6 wafer Pin Header), Backlight control connector for LVDS.



Pin#	Signal Name
1	+DC12V
2	+DC12V
3	Ground
4	Ground
5	BKLT_EN_OUT
6	BKLT_CTRL

17. CN1:

(1.25mm Pitch 2x20 Connector, DF13-40P), for 18/24-bit LVDS output connector, fully supported by Parad PS8625(DP to LVDS), the interface features dual channel 24-bit output. Low Voltage Differential Signaling, A high speed, low power data transmission standard used for display connections to LCD panels.

Function	Signal Name	Pin#	Pin#	Signal Name	Function
LVDS	12V_S0	2	1	12V_S0	LVDS
	BKLT_EN_OUT	4	3	BKLT_CTRL	
	Ground	6	5	Ground	
	LVDS_VDD5	8	7	LVDS_VDD5	
	LVDS_VDD3	10	9	LVDS_VDD3	
	Ground	12	11	Ground	
	LA_D0_P	14	13	LA_D0_N	
	LA_D1_P	16	15	LA_D1_N	
	LA_D2_P	18	17	LA_D2_N	
	LA_D3_P	20	19	LA_D3_N	
	LA_CLKP	22	21	LA_CLKN	
	LB_D0_P	24	23	LB_D0_N	
	LB_D1_P	26	25	LB_D1_N	
	LB_D2_P	28	27	LB_D2_N	
	LB_D3_P	30	29	LB_D3_N	
	LB_CLKP	32	31	LB_CLKN	
	Ground	34	33	Ground	USB3 (JP4 open)
USB3 (JP4 open)	USB3_P	36	35	USB3_N	
	5V_S5_USB	38	37	5V_S5_USB	
Power LED	PWR_LED+	40	39	Ground	Power LED

18. JP4:

(2.0mm Pitch 2x2 wafer Pin Header), USB3(CN1) or Touch jumper setting**.**

JP4	Function	
	USB3 (CN1)	Touch (TCH1)
Close 3-4 **(default)**	-	Yes
Open 3-4 (option)	Yes	-
Open 1-2 **(default)**	-	

19. TCH1:

(2.0mm Pitch 1x6 wafer Pin Header), internal Touch controller connector.

Pin#	Signal Name
1	SENSE
2	X+
3	X-
4	Y+
5	Y-
6	GND_EARCH

20. JP1:

(2.0mm Pitch 2x3 Pin Header), COM1 jumper setting, pin 1~6 are used to select signal out of pin 9 of COM1 port.

JP1 Pin#	Function
Close 1-2	**COM1 RI (Ring Indicator) (default)**
Close 3-4	COM1 Pin9: DC+5V (option)
Close 5-6	COM1 Pin9: DC+12V (option)

21. S_232:

(Switch), COM1 jumper setting, it provides selectable RS232 or RS422 or RS485 serial signal output.

Function	S_232 Pin#
RS232 (Default)	**ON: Pin1, Pin2, Pin3, Pin4**
RS422 (option)	OFF: Pin1, Pin2, Pin3, Pin4
RS485 (option)	OFF: Pin1, Pin2, Pin3, Pin4

22. S_422:

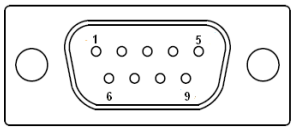
(Switch), COM1 setting, it provides selectable RS232 or RS422 or RS485 serial signal output.

Function	S_422 Pin#
RS232 (Default)	**OFF: Pin1, Pin2, Pin3, Pin4, Pin5**
RS422 (option)	ON: Pin1, Pin2, Pin3, Pin4, Pin5
RS485 (option)	ON: Pin1, Pin2, Pin3, Pin4, Pin5

S-422	Mode
Pin6 (Off)	ATX Power
Pin6 (On)	**Auto Power on (Default)**

23. COM1:

(Type DB9M), Rear serial port, standard DB9 Male serial port is provided to make a direct connection to serial devices. COM1 port is controlled by pins No.1~6 of JP1, select output Signal RI or 5V or 12V, for details, please refer to description of JP1 and S_232 and S_422 setting.



RS232 (Default)	
Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	**JP1 select Setting (RI/5V/12V)**
BIOS Setup: Advanced/F81216SEC Super IO Configuration/Serial Port 1 Configuration 【RS-232】	

RS422 (option)	
Pin#	Signal Name
1	422_RX+
2	422_RX-
3	422_TX-
4	422_TX+
5	Ground
6	NC
7	NC
8	NC
9	NC
BIOS Setup: Advanced/F81216SEC Super IO Configuration/Serial Port 1 Configuration 【RS-422】	

RS485 (option)	
Pin#	Signal Name
1	NC
2	NC
3	485-
4	485+
5	Ground
6	NC
7	NC
8	NC
9	NC
BIOS Setup: Advanced/F81216SEC Super IO Configuration/Serial Port 1 Configuration 【RS-485】	

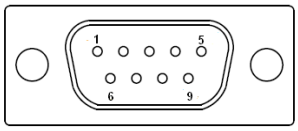
24. JP2:

(2.0mm Pitch 2x3 Pin Header), COM2 jumper setting, pin 1~6 are used to select signal out of pin 9 of COM2 port.

JP2 Pin#	Function
Close 1-2	**COM2 RI (Ring Indicator) (default)**
Close 3-4	COM2 Pin9: DC+5V (option)
Close 5-6	COM2 Pin9: DC+12V (option)

25. COM2:

(Type DB9M),Rear serial port, standard DB9 Male serial port is provided to make a direct connection to serial devices.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	**JP2 select Setting (RI/5V/12V)**

26. LED1,LED2 (option) :

LED1: LED STATUS. Green LED for Motherboard Standby Power Good status.

LED2: LED STATUS. Green LED for Touch Power status.

27. SATA_P:

(2.5mm Pitch 1x2 box Pin Header), One onboard 5V output connector are reserved to provide power for SATA devices.

Pin#	Signal Name
1	+DC5V
2	Ground

Note:

Output current of the connector must not be above 1A.

28. SATA2:

(SATA 7Pin), SATA Connectors, one SATA connector are provided, with transfer speed up to 3.0Gb/s.

29. SATA1:

(SATA 7Pin+15Pin), SATA Connectors, one SATA connector are provided, with transfer speed up to 3.0Gb/s.

30. SD1:

(SD card slot), Secure Digital Memory Card socket.

31. MPCIE1:

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with USB2.0 and LPC and SMBUS and PCIe signal. MPCIe card size is 30x50.95mm.

32. H1/H2:

MPCIE1 SCREW HOLES, H1and H2 for mini PCIE card (30mmx50.95mm) assemble.

33. F_AUDIO1:

(2.0mm Pitch 2X6 Pin Header), Front Audio, An onboard Realtek ALC662-VD codec is used to provide high-quality audio I/O ports. Line Out can be connected to a headphone or amplifier. Line In is used for the connection of external audio

source via a Line in cable. MIC is the port for microphone input audio.

Signal Name	Pin#	Pin#	Signal Name
+5V	1	2	GND_AUD
LINE-OUT-L	3	4	LINE-OUT-R
FRONT_JD	5	6	LINE1_JD
LINE_IN-L	7	8	LINE-IN-R
MIC-IN-L	9	10	MIC-IN-R
GND-AUD	11	12	MIC1_JD

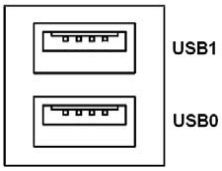
34. LINE_OUT1:

(Diameter 3.5mm Jack), HD Audio port, An onboard Realtek ALC662-VD codec is used to provide high quality audio I/O ports. Line Out can be connected to a headphone or amplifier.

Line out

35. USBCON1:

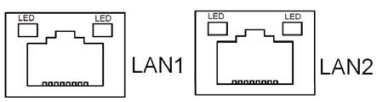
USB0/USB1：(Double stack USB type A), Rear USB connector, it provides up to two USB2.0 port, High-speed USB 2.0 allows data transfers up to 480 Mb/s, support USB full-speed and low-speed signaling.



Each USB Type A Receptacle (2 Ports) Current limited value is 1.5A.
If the external USB device current exceeds 1.5A, please separate connectors into different Receptacle.

36. LAN1/LAN2:

LAN1/LAN2: (RJ45 Connector), Rear LAN port, Two standard 10/100/1000M RJ-45 Ethernet ports are provided. Used intel 82574L chipset, LINK LED (green) and ACTIVE LED (yellow) respectively located at the left-hand and right-hand side of the Ethernet port indicate the activity and transmission state of LAN.



37. BUZ1:

Onboard buzzer.

38. CN2:

(DF13-30P Connector),For expand output connector, It provides eight GPIO,one RS422 or RS485,one USB2.0,one Power on/off, one Reset.

Function	Signal Name	Pin#	Pin#	Signal Name	Function
5V	5V_S5	2	1	5V_S5	5V
SOC_GPIO10	GPIO_IN2	4	3	GPIO_IN1	SOC_SPIO09
SOC_GPIO26	GPIO_IN4	6	5	GPIO_IN3	SOC_GPIO17
SOC_GPIO05	GPIO_OUT2	8	7	GPIO_OUT1	SOC_GPIO04
SOC_GPIO08	GPIO_OUT4	10	9	GPIO_OUT3	SOC_GPIO06
	Ground	12	11	Ground	
485 or 422	485+_422TX+	14	13	485-_422TX-	485 or 422
RS422	422_RX+	16	15	422_RX-	RS422
	NC	18	17	NC	
	NC	20	19	NC	
5V	5V_S0	22	21	HDD_LED+	HDD LED
USB2.0	5V_USB01	24	23	5V_USB01	USB2.0
	USBDN1_P	26	25	USBDN1_N	
	Ground	28	27	FP_RST-	RESET
Power auto on	PWRBTN_ON	30	29	Ground	
COM5 BIOS Setup： Advanced/IT8518Super IO Configuration/Serial Port 1 Configuration【RS-422】 Advanced/IT8518Super IO Configuration/Serial Port 1 Configuration【RS-485】					

39. EC_GPIO1:

(2.0mm Pitch 1X10 Pin Header),For expand connector, it provides eight GPIO.

Pin#	Signal Name
1	Ground
2	EC_GPIO1
3	EC_GPIO2
4	EC_GPIO3
5	EC_GPIO4
6	EC_GPIO5
7	EC_GPIO6
8	EC_GPIO7
9	EC_GPIO8
10	3.3V

40. CN3:

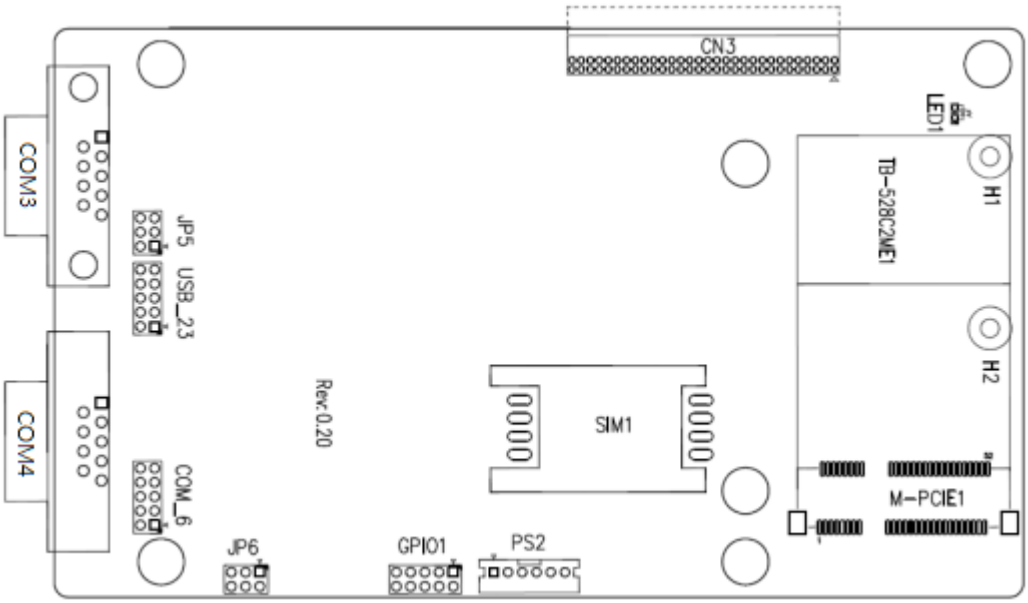
(1.27mm Pitch 2X30 Female Header), for expand output connector, It provides four GPIO, two USB 2.0,one PS/2 mouse, one PS/2 keyboard, two uart, one PCIex1, one SMbus. connected to the TB-528 riser Card.

Function	Signal Name	Pin#	Pin#	Signal Name	Function
	5V_S5_USB	1	2	5V_S5_USB	
	5V_S5_USB	3	4	5V_S5_USB	
	USB23_OC	5	6	PSON_ATX-	
Exp-USB2	USB2_DM	7	8	USB2_DP	Exp-USB2
Exp-USB3	USB3_DM	9	10	USB3_DP	Exp-USB3
	Ground	11	12	Ground	
PS/2 MS	PS2_MSCLK	13	14	PS2_MSDATA	PS/2 MS
PS/2 KB	PS2_KBCLK	15	16	PS2_KBDATA	PS/2 KB
COM4 (UART)	COM4_RI	17	18	COM4_DCD-	COM4 (UART)
	COM4_TXD	19	20	COM4_RXD	
	COM4_DTR	21	22	RICOM4_RTS-	
	COM4_DSR	23	24	COM_CTS-	
	Ground	25	26	Ground	
COM3 (UART)	COM3_RI	27	28	COM3_DCD-	COM3 (UART)
	COM3_TXD	29	30	COM3_RXD	
	COM3_DTR	31	32	DSRCOM3_RTS-	
	COM3_DSR	33	34	DTRCOM3_CTS-	
GPIO23	SOC_GPIO23	35	36	ICH_GPIO22	GPIO12
GPIO25	SOC_GPIO25	37	38	ICH_GPIO24	GPIO24
	Ground	39	40	Ground	
PCIE	PCIE_TX0_DN	41	42	PCIE_TX0_DP	PCIE
	PCIE_RX0_DN	43	44	PCIE_RX0_DP	
	Ground	45	46	Ground	
	PCIE_REFCLK0_DN	47	48	PCIE_REFCLK0_DP	
	PCIE0_WAKE_N	49	50	PLTRST_3P3_N	
SMBUS	SMB_CLK_S0	51	52	SMB_DATA_S0	SMBUS
PCIE	PCIE_CLKREQ0_N	53	54	Ground	
	3P3V_S5	55	56	PWRBTN_ON-	Power Auto on
	3P3V_S5	57	58	3P3V_S5	
12V	12V_S0	59	60	12V_S0	12V

41. TB-528C2ME1（option）：

SBC-7111 Riser Card, TB-528C2ME1 CN3 connect to SBC-7111 CN3 pin Header.

TB-528C2ME1 Top：



CN3：

(1.27mm Pitch 2X30 Pin Header), connect to SBC-7111 CN3 pin Header.

M-PCIE1：

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with **USB2.0(USB2)**, Smbus, SIM and PCIe signal. MPCIe card size is 30x30mm or 30x50.95mm.

Signal Name	Function support
PCIe 1X	Yes
USB2.0 (USB2)	Yes
SMBus	Yes
SIM	Yes

H1/H2:

MPCIE1 SCREW HOLES, H2 for mini PCIE card (30mmx30mm) assemble. H1 for mini PCIE card (30mmx50.95mm) assemble.

LED1：

Mini PCIe devices LED Status.

SIM1：

(SIM Socket 6 Pin), Support SIM Card devices.

PS2：

(2.0mm Pitch 1X6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

GPIO1：

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC
NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	SOC-GPIO22
SOC-GPIO23	7	8	SOC-GPIO25
SOC-GPIO24	9	10	+5V

USB_23：

(2.0mm Pitch 2x5 Pin Header) ,Front USB connector, it provides one USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB23	1	2	5V_USB23
USB3_N	3	4	**USB2_N (option, NC)**
USB3_P	5	6	**USB2_P (option, NC)**
Ground	7	8	Ground
NC	9	10	Ground

Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

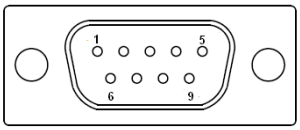
JP5：

(2.0mm Pitch 2x3 Pin Header), COM3 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM3 port.

JP5 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM3 Pin9=+5V (option)
Close 5-6	COM3 Pin9=+12V (option)

COM3：

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM3 port is controlled by pins No.1~6 of **JP5**, select output Signal RI or 5V or 12v, for details, please refer to description of JP3.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP5 Setting: **Pin1-2: RI (Ring Indicator) (default)** Pin3-4 : 5V Standby power (option) Pin5-6: 12V Standby power (option)

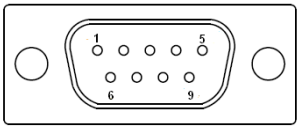
JP6：

(2.0mm Pitch 2x3 Pin Header), COM4 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM4 port.

JP6 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM4 Pin9=+5V (option)
Close 5-6	COM4 Pin9=+12V (option)

COM4：

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM4 port is controlled by pins No.1~6 of **JP6**, select output Signal RI or 5V or 12v, for details, please refer to description of JP6.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP6 Setting: **Pin1-2: RI (Ring Indicator) (default)** Pin3-4 : 5V Standby power (option) Pin5-6: 12V Standby power (option)

COM_6（option）：

(2.0mm Pitch 2X5 Pin Header), COM4 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

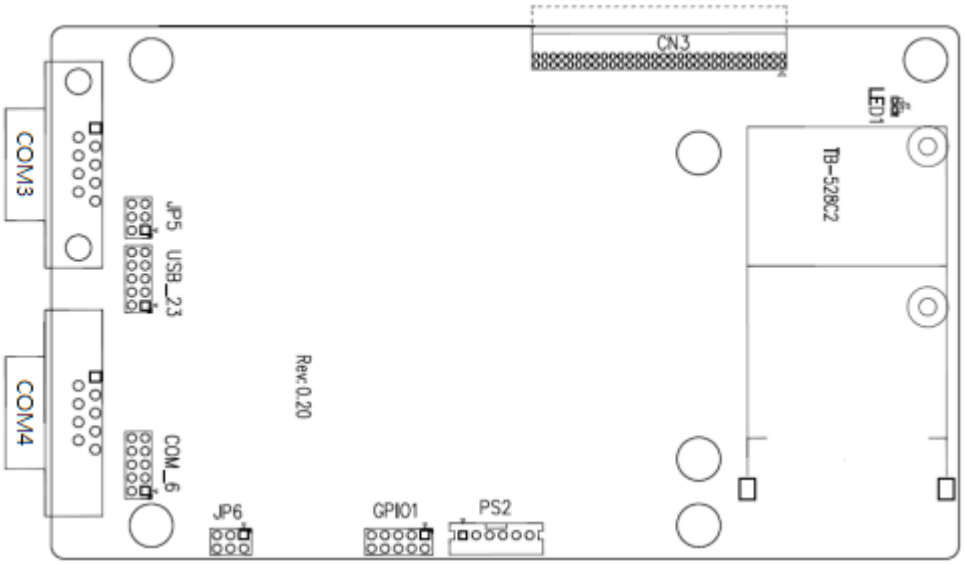
Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR

Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting: RI/5V/12V	9	10	NC

42. TB-528C2（option）：

SBC-7111 Riser Card, TB-528C2 CN3 connect to SBC-7111 CN3 pin Header.

TB-528C2 Top：



CN3：

(1.27mm Pitch 2X30 Pin Header), connect to SBC-7111 CN3 pin Header.

LED1：

Mini PCIe devices LED Status.

PS2：

(2.0mm Pitch 1X6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

GPIO1：

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC
NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	SOC-GPIO22
SOC-GPIO23	7	8	SOC-GPIO25
SOC-GPIO24	9	10	+5V

USB_23：

(2.0mm Pitch 2x5 Pin Header), Front USB connector, it provides one USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB23	1	2	5V_USB23
USB3_N	3	4	USB2_N
USB3_P	5	6	USB2_P
Ground	7	8	Ground
NC	9	10	Ground

Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

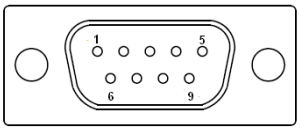
JP5：

(2.0mm Pitch 2x3 Pin Header), COM3 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM3 port.

JP5 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM3 Pin9=+5V (option)
Close 5-6	COM3 Pin9=+12V (option)

COM3：

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM3 port is controlled by pins No.1~6 of **JP5**, select output Signal RI or 5V or 12v, for details, please refer to description of JP3.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP5 Setting: **Pin1-2: RI (Ring Indicator) (default)** Pin3-4 : 5V Standby power (option) Pin5-6: 12V Standby power (option)

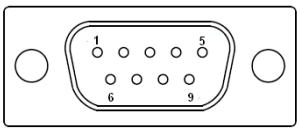
JP6：

(2.0mm Pitch 2x3 Pin Header), COM4 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM4 port.

JP6 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM4 Pin9=+5V (option)
Close 5-6	COM4 Pin9=+12V (option)

COM4:

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM4port is controlled by pins No.1~6 of **JP6**, select output Signal RI or 5V or 12v, for details, please refer to description of JP6.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP6 Setting: **Pin1-2: RI (Ring Indicator) (default)** Pin3-4 : 5V Standby power (option) Pin5-6: 12V Standby power (option)

COM_6（option）：

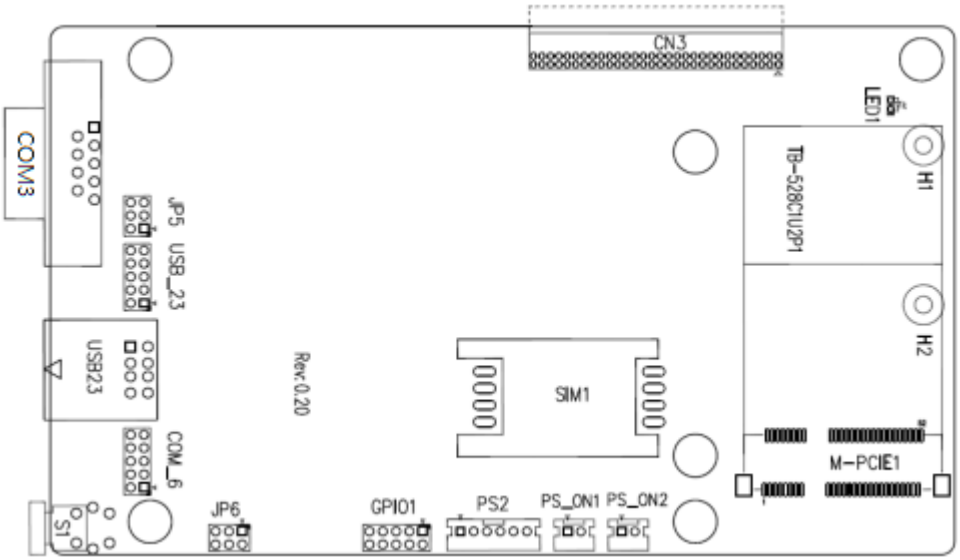
(2.0mm Pitch 2X5 Pin Header), COM4 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting: RI/5V/12V	9	10	NC

43. TB-528C1U2P1/TB-528C1U2（option）：

SBC-7111 Riser Card, TB-528C1U2P1 CN3 connect to SBC-7111 CN3 pin Header.

TB-528C1U2P1 Top：



CN3：

(1.27mm Pitch 2X30 Pin Header), connect to SBC-7111 CN3 pin Header.

M-PCIE1：

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with Smbus, SIM and PCIe signal. MPCIe card size is 30x30mm or 30x50.95mm.

Signal Name	Function support
PCIe 1X	Yes
USB2.0 (USB2)	**NC (option)**
SMBus	Yes
SIM	Yes

H1/H2:

MPCIE1 SCREW HOLES, H2 for mini PCIE card (30mmx30mm) assemble. H1 for mini PCIE card (30mmx50.95mm) assemble.

LED1：

Mini PCIe devices LED Status.

SIM1（option）：

(SIM Socket 6 Pin) Support SIM Card devices.

PS_ON1：

(2.0mm Pitch 1X2 Pin Wafer) ATX Power and Auto Power on jumper setting.

PS_ON	Mode
Close 1-2	**Auto Power on (Default)**
Open 1-2	ATX Power

PS_ON2（option）：

(2.0mm Pitch 1X2 Pin Wafer).

PS2：

(2.0mm Pitch 1X6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

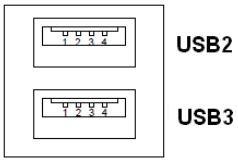
GPIO1：

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC
NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	SOC-GPIO22
SOC-GPIO23	7	8	SOC-GPIO25
SOC-GPIO24	9	10	+5V

USB23：

(Double stack USB type A), Rear USB connector, it provides up to 2 USB2.0 ports, speed up to 480Mb/s.



USB_23（option）：

(2.0mm Pitch 2x5 Pin Header) Front USB connector, it provides one USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB23	1	2	5V_USB23
USB3_N	3	4	USB2_N
USB3_P	5	6	USB2_P
Ground	7	8	Ground
NC	9	10	Ground

Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

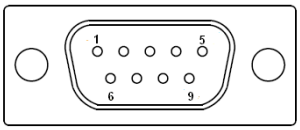
JP5：

(2.0mm Pitch 2x3 Pin Header), COM3 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM3 port.

JP5 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM3 Pin9=+5V (option)
Close 5-6	COM3 Pin9=+12V (option)

COM3：

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM3 port is controlled by pins No.1~6 of **JP5**, select output Signal RI or 5V or 12v, for details, please refer to description of JP3.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground

6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP5 Setting: **Pin1-2: RI (Ring Indicator) (default)** Pin3-4 : 5V Standby power (option) Pin5-6: 12V Standby power (option)

JP6：

(2.0mm Pitch 2x3 Pin Header), COM_6 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM_6 port.

JP6 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM_6 Pin9=+5V (option)
Close 5-6	COM_6 Pin9=+12V (option)

COM_6：

(2.0mm Pitch 2X5 Pin Header), COM4 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting: RI/5V/12V	9	10	NC

S1：

PWR BT: POWER on/off Button, They are used to connect power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.

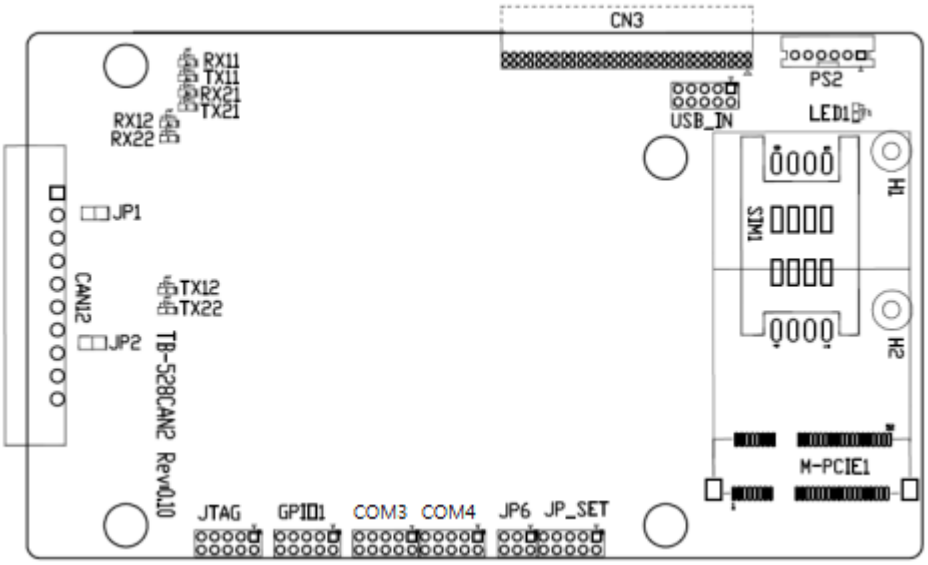
PWR LED: POWER LED status.

S1	**Model**
Yes	TB-528C1U2P1
No	TB-528C1U2

44. TB-528CAN2 R0.10（option）:

SBC-7111 Riser Card, TB-528CAN2 CN3 connect to SBC-7111 CN3 pin Header. It provides two CAN-bus Interface.

TB-528CAN2 Top：



CN3：

(1.27mm Pitch 2X30 Pin Header), connect to SBC-7111 CN3 pin Header.

M-PCIE1：

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with Smbus,USB2.0,SIM and PCIe signal. MPCIe card size is 30x30mm or 30x50.95mm

Signal Name	Function support
PCIe 1X	Yes
USB2.0 (USB2)	Yes
SMBus	Yes
SIM	Yes

H1/H2:

MPCIE1 SCREW HOLES, H2 for mini PCIE card (30mmx30mm) assemble. H1 for mini PCIE card (30mmx50.95mm) assemble.

LED1：

Mini PCIe devices LED Status.

SIM1（option）：

(SIM Socket 6 Pin), Support SIM Card devices.

PS2：

(2.0mm Pitch 1X6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

USB_IN（option）：

(2.0mm Pitch 2x5 Pin Header) ,Front USB connector, it provides two USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB23	1	2	5V_USB23
NC (USB3_N)	3	4	NC (USB2_N)
NC (USB3_P)	5	6	NC (USB2_P)
Ground	7	8	Ground
NC	9	10	Ground

Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

JP_SET（option）：

(2.0mm Pitch 2x5 Pin Header).

Signal Name	Pin#	Pin#	Signal Name
3P3V_S5_USB	1	2	3P3V_S5
3P3V_S5_USB	3	4	3P3V_S5

3P3V_S5_USB	5	6	3P3V_S5
PSON_ATX	7	8	Ground
PSON_ATX	9	10	Ground

JP6：

(2.0mm Pitch 2x3 Pin Header), COM4 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM4 port.

JP6 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM4 Pin9=+5V (option)
Close 5-6	COM4 Pin9=+12V (option)

COM4：

(2.0mm Pitch 2X5 Pin Header), COM4 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting: RI/5V/12V	9	10	NC

COM3：

(2.0mm Pitch 2X5 Pin Header), COM3 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

GPIO1：

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC
NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	SOC-GPIO22
SOC-GPIO23	7	8	SOC-GPIO25
SOC-GPIO24	9	10	+5V

JTAG：

(2.0mm Pitch 2x5 Pin Header), Reserve.

JP1：

(2.0mm Pitch 1x2 Pin Header), Reserve.

JP2：

(2.0mm Pitch 1x2 Pin Header), Reserve.

CAN1/CAN2：

(3.5mm Pitch 1x10 Pin connector), it provides two CAN-bus Interface.

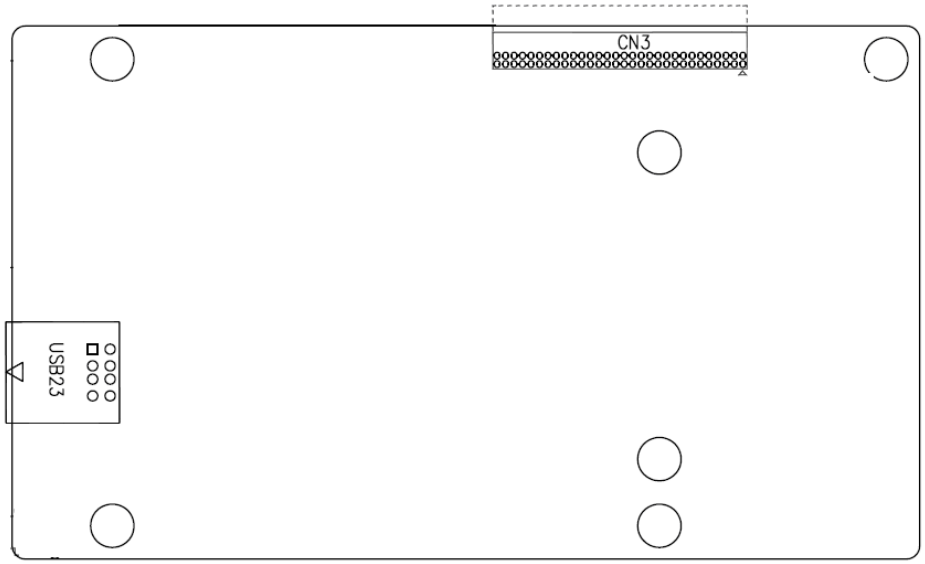
Pin#	Channel	Signal Name	Function
1	CAN2	CANL2	CAN bus Signal L
2		R2-	Terminal resistor R-(internally connected to CANL2)
3		FG	Shield cable (FG)
4		R2+	Terminal resistor R+(internally connected to CANH2)
5		CANH2	CAN bus Signal H
6	CAN1	CANL1	CAN bus Signal L
7		R1-	Terminal resistor R-(internally connected to CANL1)
8		FG	Shield cable (FG)
9		R1+	Terminal resistor R+(internally connected to CANH1)
10		CANH1	CAN bus Signal H

【See TB-528AN2 Manual】

45. TB-528U2（option）:

SBC-7111 Riser Card,TB-528U2 CN3 connect to SBC-7111 CN3 pin Header.

TB-528U2 Top：

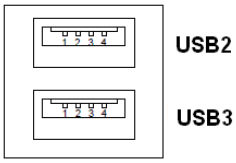


CN3：

(1.27mm Pitch 2X30 Pin Header), connect to SBC-7111 CN3 pin Header.

USB23：

(Double stack USB type A), Rear USB connector, it provides up to 2 USB2.0 ports, speed up to 480Mb/s.



Chapter 3 BIOS Setup

3.1 Operations after POST Screen

After CMOS discharge or BIOS flashing operation,.Press [Delete] key to enter CMOS Setup.

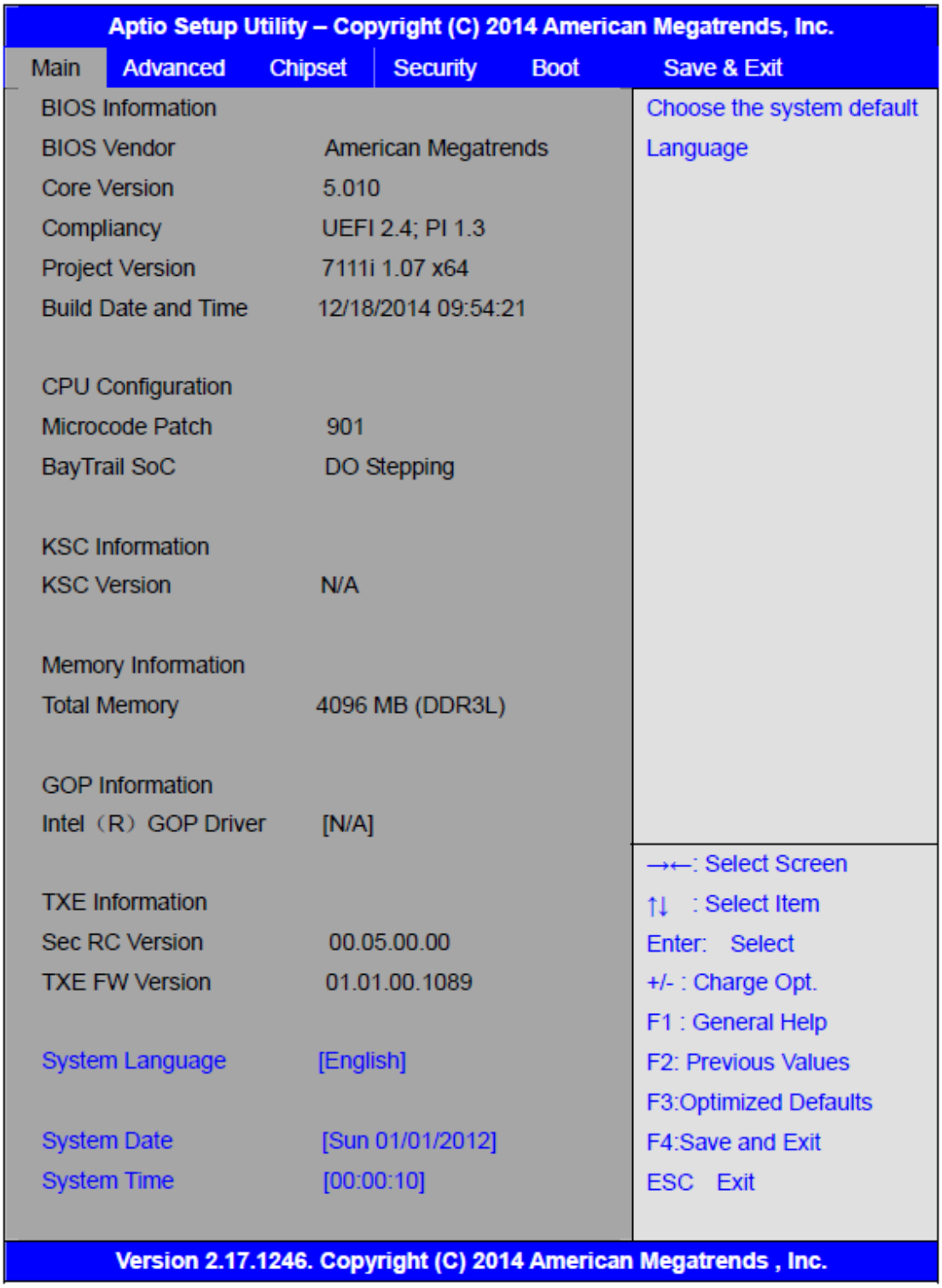
American Megatrends
Version 2.17.1246. Copyright (C) 2014 American Megatrends, Inc.
BIOS Date: 12/18/2014 09:54:21 Ver: 7111i107
Press 〈DEL〉 or 〈ESC〉 to enter setup
99

After optimizing and exiting CMOS Setup, the POST screen displayed for the first time is as follows and includes basic information on BIOS, CPU, memory, and storage devices.

3.2 BIOS Setup Utility

Press [Delete] key to enter BIOS Setup utility during POST, and then a main menu containing system summary information will appear.

3.3 Main Settings



System Time:

Set the system time, the time format is:

Hour : 0 to 23

Minute : 0 to 59

Second : 0 to 59

System Date:

Set the system date, the date format is:

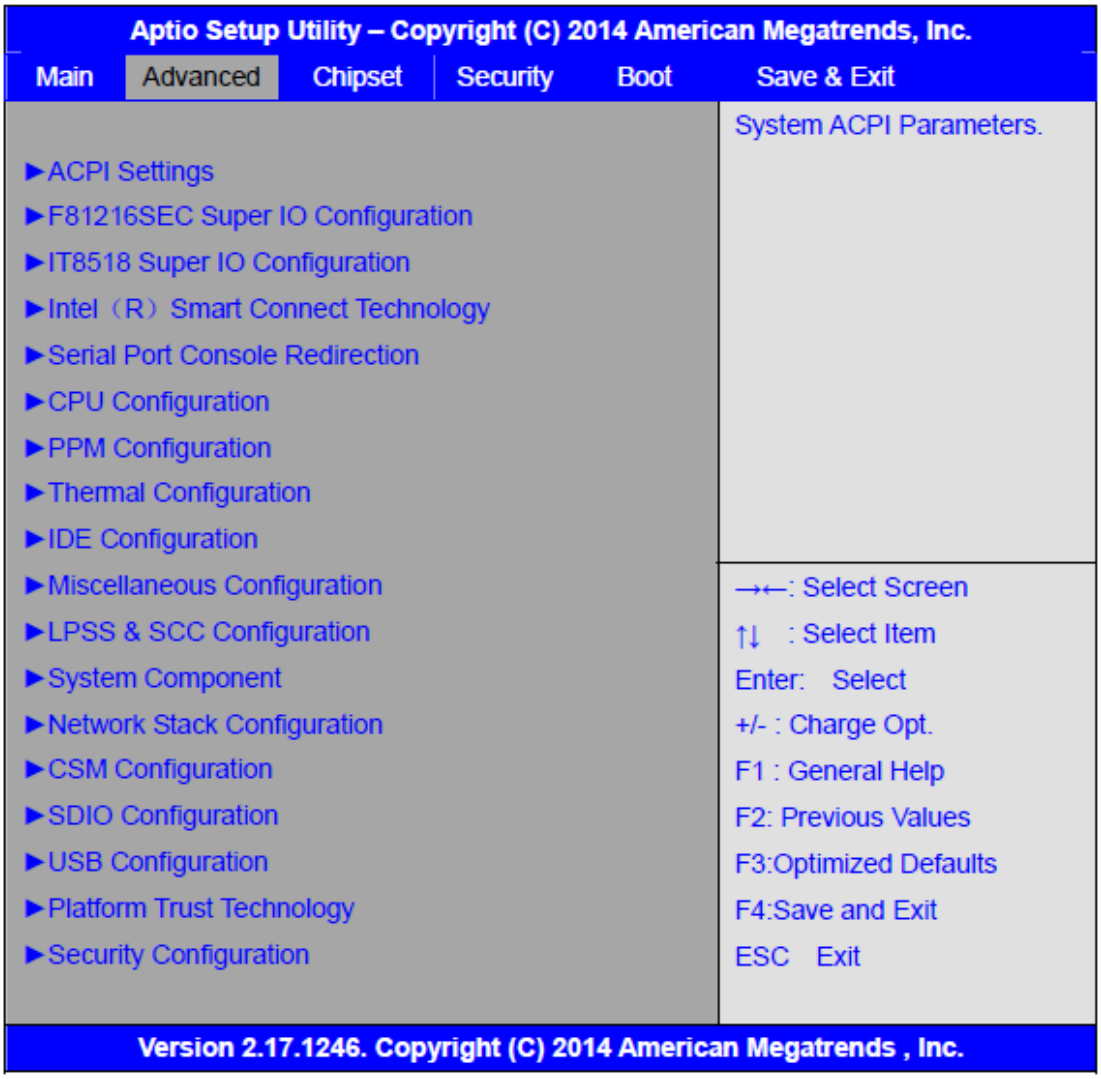
Day: Note that the 'Day' automatically changes when you set the date.

Month: 01 to 12

Date: 01 to 31

Year: 1998 to 2099

3.4 Advanced Settings



3.4.1 ACPI Settings

Enable ACPI Auto Conf:

[Disabled]

[Enabled]

Enable Hibernation:

[Enabled]

[Disabled]

ACPI Sleep State:

[S3 (Suspend to RAM)]

[Suspend Disabled]

Lock Legacy Resources:

[Disabled]

[Enabled]

3.4.2 F81216SEC Super IO Configuration

Super IO chip F81216SEC

Serial Port 1 Configuration

UART1 Mode Selection：

[RS-232]

[RS-485]

[RS-422]

Serial Port 2 Configuration

Change Settings [Auto]

Serial Port 3 Configuration

Change Settings [Auto]

Serial Port 4 Configuration

Change Settings [Auto]

3.4.3 IT8518 Super IO Configuration

Super IO chip IT8518/IT8519

Serial Port 1 Configuration

Backlight PWM Controller（COM5）：

[RS-485]

[RS-422]

Serial Port 2 Configuration (COM6)

Change Settings [Auto]

3.4.4 Intel（R）Smart Connect Technology

ISCT Support

[Disabled]

[Enabled]

3.4.5 Serial Port Console Redirection

COM0

Console Redirection

[Disabled]

[Enabled]

Console Redirection Settings

Legacy Console Redirection

Legacy Console Redirection settings

Serial Port for Out-of-Band Management/

Windows Emergency Management Services (EMS)

Console Redirection

[Disabled]

[Enabled]

Console Redirection Settings

3.4.6 CPU Configuration

Socket 0 CPU Information

Intel(R) Atom(TM) CPU E3845 @ 1.91GHz

CPU Signature	30679
Microcode Patch	901
Max CPU Speed	1910 MHz
Mix CPU Speed	500 MHz
Processor Cores	4
Intel HT Technology	Not Supported
Intel HT-X Technology	Supported
L1 Data Cache	24KB x 4
L1 Code Cache	32KB x 4
L2 Cache	1024KB x 2
L2 Cache	Not Present

CPU Thermal configuration

CPU Speed	1918 MHz
64-bit	Supported

Hyper-Threading:

[Enabled]

[Disabled]

Limit CPUID Maximum:

[Disabled]

[Enabled]

Execute Disable Bit:

[Enabled]

[Disabled]

Intel Virtualization Technology:

[Enabled]

[Disabled]

Power Technology

[Energy Efficient]

[Disabled]

[Custom]

3.4.7 PPM Configuration

CPU C State Report

[Enabled]

[Disabled]

Max CPU C-state

[C7]

[C6]

[C1]

SOix

[Disabled]

[Enabled]

3.4.8 Thermal Configuration Parameters

3.4.9 IDE Configuration

Serial-ATA(SATA)

[Enabled]

[Disabled]

SATA Test Mode

[Disabled]

[Enabled]

SATA Speed Support

[Gen2]

[Gen1]

SATA ODD Port

[No ODD]

[Porto ODD]

[Port1 ODD]

[Disabled]

SATA Mode

[AHCI Mode]

[IDE Mode]

Serial-ATA Port 0

[Enabled]

[Disabled]

SATA Port0 Hotplug

[Disabled]

[Enabled]

Serial-ATA Port 1

[Enabled]

[Disabled]

SATA Port1 Hotplug

[Disabled]

[Enabled]

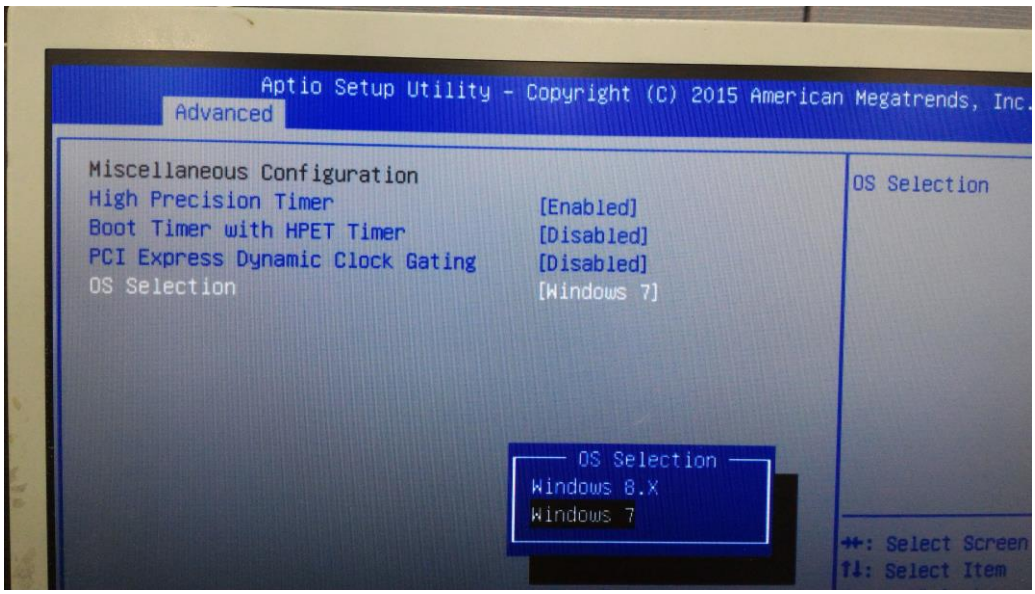
SATA Port0

Not Present

SATA Port1

Not Present

3.4.10 Miscellaneous Configuration



High Precision Timer

[Enabled]

[Disabled]

Boot Timer with HPET Timer

[Disabled]

[Enabled]

PCI Express Dynamic Clock Gating

[Disabled]

[Enabled]

OS Selection

Use the **OS Selection** option to select an operating system for the system.

Note:

Users must go to this item to select the OS mode before installing corresponding OS driver, otherwise problems will occur when installing the driver.

3.4.11 LPSS & SCC Configuration

LPSS & SCC Configuration	[ACPI Mode]
SCC Configuration	
SCC eMMC Support	[eMMC AUTO MODE]
SCC eMMC 4.5 DDR50 Support	[Enabled]
SCC eMMC 4.5 HS200 Support	[Disabled]
eMMC Secure Erase	[Disabled]
SCC SDIO Support	[Enabled]
SCC SD Card Support	[Enabled]
SDR25 Support for SDCard	[Disabled]
SDR50 Support for SDCard	[Enabled]
MIPI HSI Support	[Disabled]
LPSS Configuration	
LPSS DMA #1 Support	[Enabled]
LPSS DMA #2 Support	[Enabled]
LPSS I2C #1 Support	[Enabled]
LPSS I2C #2 Support	[Enabled]
LPSS I2C #3 Support	[Enabled]
LPSS I2C #4 Support	[Enabled]

LPSS I2C #5 Support	[Enabled]
LPSS I2C #6 Support	[Enabled]
LPSS I2C #7 Support	[Enabled]
NFC	[Disabled]
Touch Pad	[Disabled]
I2C touch Device Address	
LPSS HSUART #1 Support	[Disabled]
LPSS HSUART #2 Support	[Disabled]
LPSS PWM #1 Support	[Enabled]
LPSS PWM #2 Support	[Enabled]
LPSS SPI Support	[Enabled]

3.4.12 System Component

3.4.13 Network Stack Configuration

Network Stack	[Disabled]

3.4.14 CSM Configuration

CSM Support	[Enabled]
CSM16 Module Version	07.76
GateA20 Active	[Upon Request]
	[Always]
Option ROM Messages	[Force BIOS]
	[Keep Current]
Boot option filter	[UEFI and Legacy]
	[Legacy only]
	[UEFI only]
Network	
	[UEFI]
	[Do not launch]
	[Legacy]
Storage	
	[UEFI]
	[Do not launch]
	[Legacy]
Video	
	[Legacy]
	[UEFI]

[Do not launch]

Other PCI devices

[UEFI]

[Do not launch]

[Legacy]

3.4.15 SDIO Configuration

3.4.16 USB Configuration

USB Configuration

USB Module Version 8.11.02

USB Devices:

1 keyboard, 1 Mouse，2 Hubs

Legacy USB Support:

[Enabled]

[Disabled]

XHCI Hand-off:

[Enabled]

[Disabled]

EHCI Hand-off:

[Disabled]

[Enabled]

USB Mass Storage Driver Support

[Enabled]

[Disabled]

USB hardware delays and time-outs：

USB transfer time-out:

[20 sec]

[10 sec]

[5 sec]

[1 sec]

Device reset time-out:

[20 sec]

[10 sec]

[30 sec]

[40 sec]

Device power-up delay

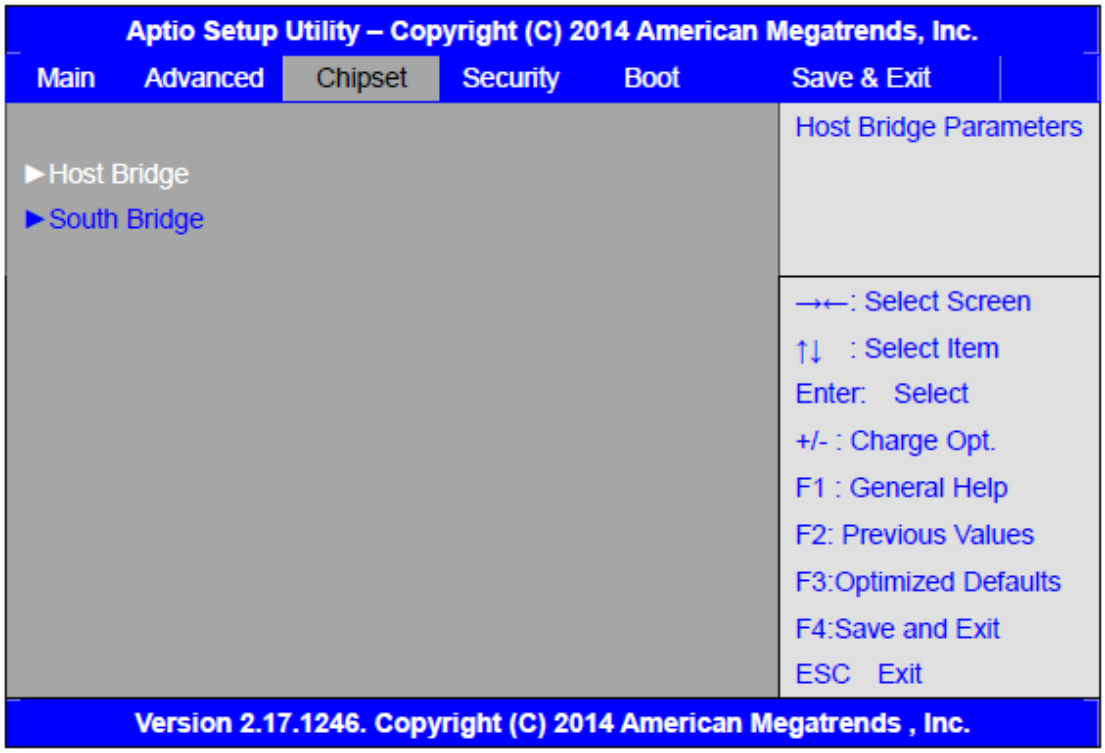
[Auto]

[Manual]

3.4.17 Platform Trust Technology

3.4.18 Security Configuration

3.5 Chipset Settings



3.5.1 Host Bridge

►Intel IGD Configuration

►IGD – LCD Control

Force Lid Status	[On]
	[Off]
BIA	[Auto]
ALS Support	[Disabled]
IGD Flat Panel	[Auto]
Pannel Scaling	[Auto]

►Memory Frequency and Timing

►Graphics Power Management Control

Memory Information	
Total Memory	4096 MB(DDR3L)
Memory Slot0	4096 MB(DDR3L)
DIMM#1	Not Present

Max TOLUD	
	[Dynamic]
	[2GB]
	[2.25GB]
	[2.5GB]
	[2.75GB]
	[3GB]

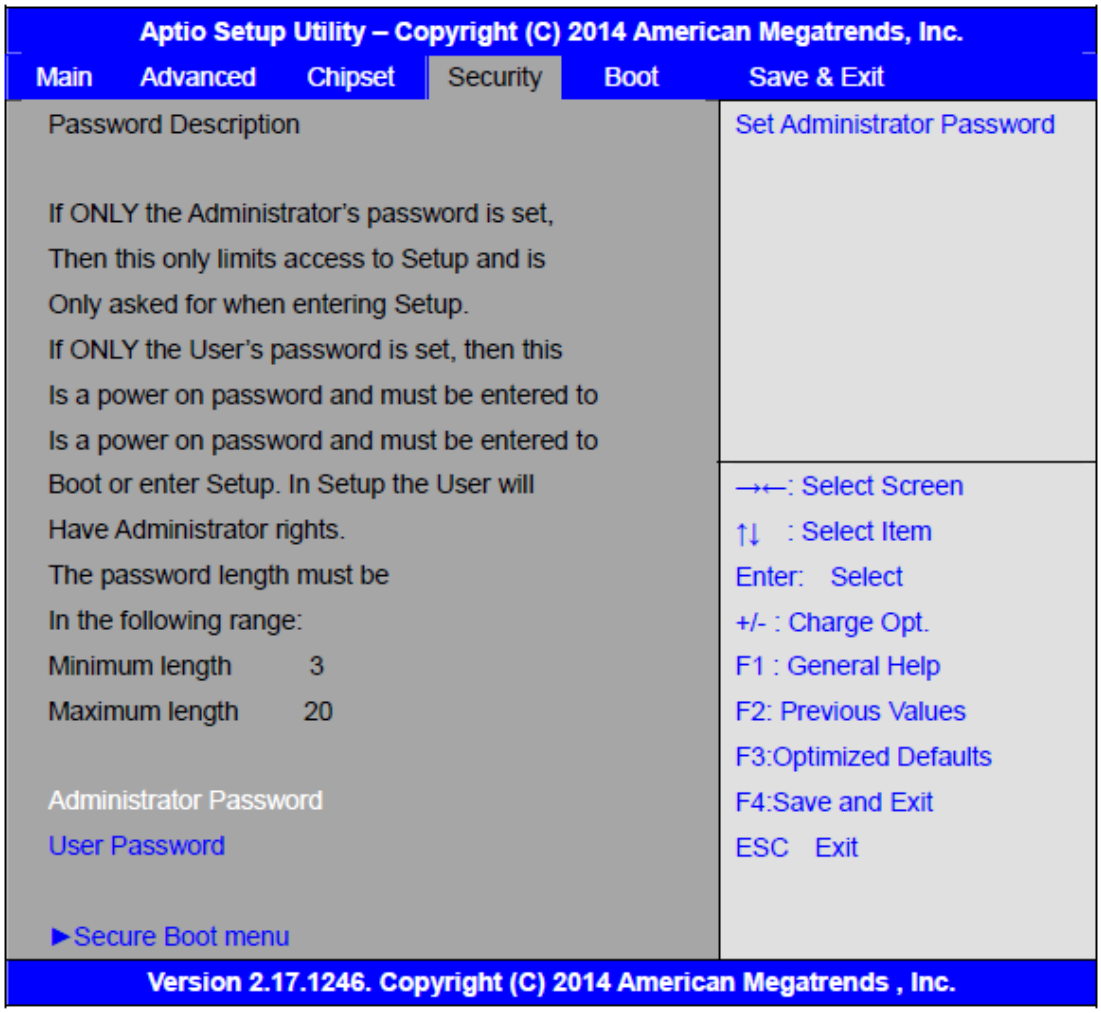
3.5.2 South Bridge

►Azalia HD Audio

►USB Configuration

USB OTG Support	[Disabled]
USB VBUS	[On]
XHCI Mode	[Smart Auto]
USB2 Link Power Management	[Enabled]
USB 2.0(EHCI) Support	[Enabled]
USB EHCI debug	[Disabled]
USB Per Port Control	[Enabled]
USB Port 0	[Enabled]
USB Port 1	[Enabled]
USB Port 2	[Enabled]
USB Port 3	[Enabled]

3.6 Security Settings


Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Main
Advanced
Chipset
Security
Boot
Save & Exit
Password Description
If ONLY the Administrator's password is set,
Then this only limits access to Setup and is
Only asked for when entering Setup.
If ONLY the User's password is set, then this
Is a power on password and must be entered to
Is a power on password and must be entered to
Boot or enter Setup. In Setup the User will
Have Administrator rights.
The password length must be
In the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
►Secure Boot menu
Set Administrator Password
→←: Select Screen
↑↓ : Select Item
Enter: Select
+/- : Charge Opt.
F1 : General Help
F2: Previous Values
F3:Optimized Defaults
F4:Save and Exit
ESC Exit
Version 2.17.1246. Copyright (C) 2014 American Megatrends , Inc.

3.6.1 Administrator Password

3.6.2 User Password

Type the password with up to 20 characters and then press ⮜Enter⮞ key. This will clear all previously typed CMOS passwords. You will be requested to confirm the password. Type the password again and press ⮜Enter⮞ key. You may press ⮜Esc⮞ key to abandon password entry operation.

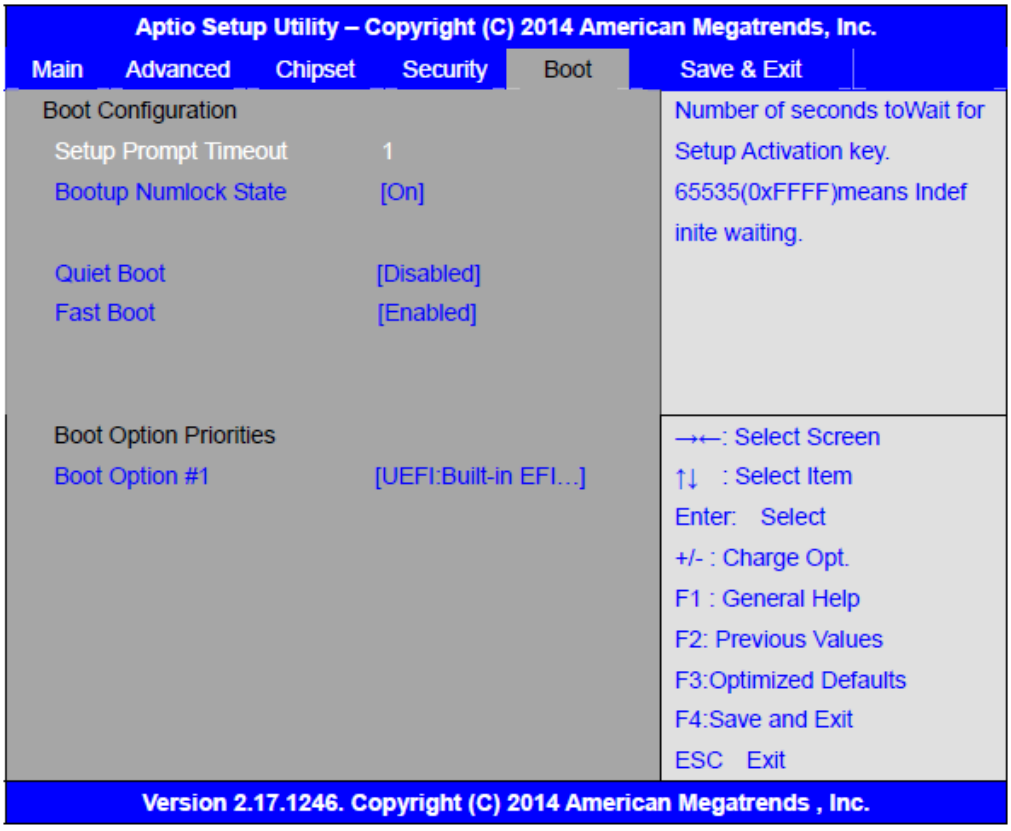
To clear the password, just press ⮜Enter⮞ key when password input window pops up. A confirmation message will be shown on the screen as to whether the password

will be disabled. You will have direct access to BIOS setup without typing any password after system reboot once the password is disabled.

Once the password feature is used, you will be requested to type the password each time you enter BIOS setup. This will prevent unauthorized persons from changing your system configurations.

Also, the feature is capable of requesting users to enter the password prior to system boot to control unauthorized access to your computer. Users may enable the feature in Security Option of Advanced BIOS Features. If Security Option is set to System, you will be requested to enter the password before system boot and when entering BIOS setup; if Security Option is set to Setup, you will be requested for password for entering BIOS setup.

3.7 Boot Settings



Setup Prompt Timeout [1]

Bootup Numlock State

[On]

[off]

Quiet Boot

[Disabled]

[Enabled]

Fast Boot

[Disabled]

[Enabled]

Boot Option Priorities

Boot Option #1

Sets the system boot order

Hard Drive BBS Priorities [SATA PM:*** …]

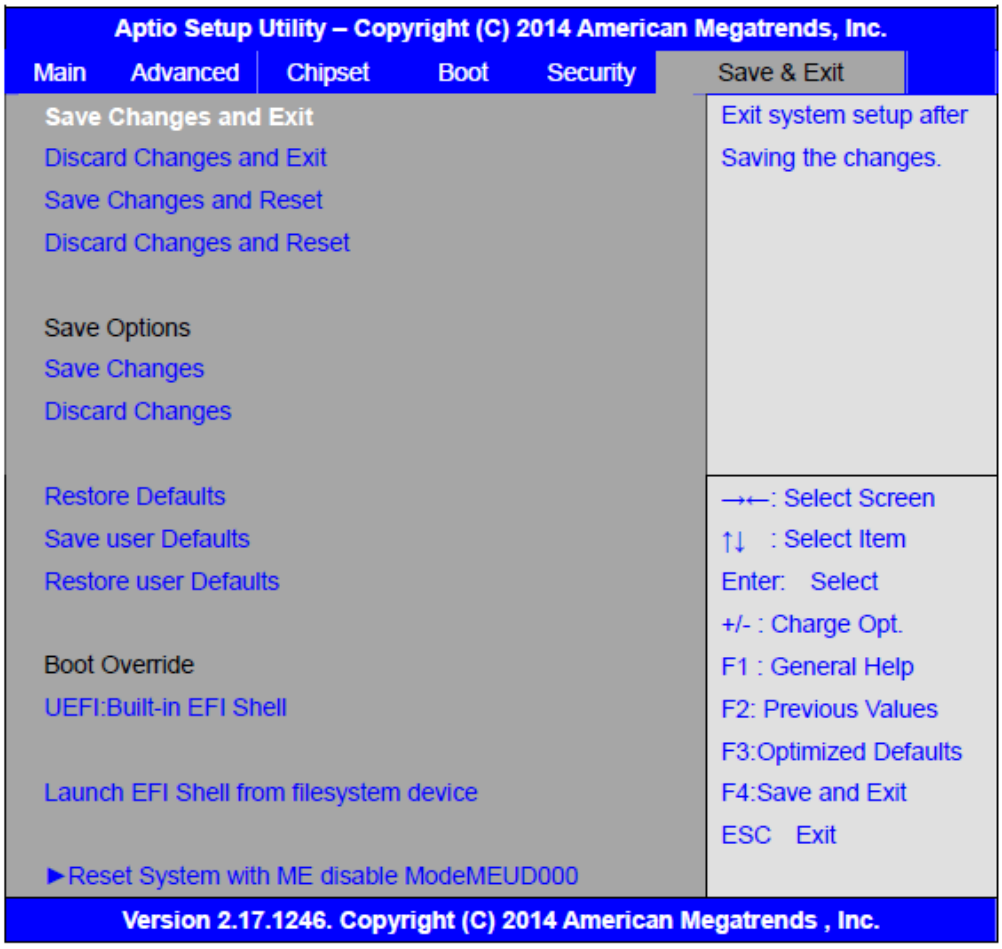
Boot Option #1

SATA PM:***…

******

Disabled

3.8 Save & Exit Settings



Save Changes and Exit

Save & Exit Setup save Configuration and exit ?

[Yes]

[No]

Discard Changes and Ext

Exit Without Saving Quit without saving?

[Yes]

[No]

Save Changes and Reset

Save & reset Save Configuration and reset?

[Yes]

[No]

Discard Changes and Reset

Reset Without Saving Reset without saving?

[Yes]

[No]

Save Changes

Save Setup Values Save configuration?

[Yes]

[No]

Discard Changes

Load Previous Values Load Previous Values?

[Yes]

[No]

Restore Defaults

Load Optimized Defaults Load optimized Defaults?

[Yes]

[No]

Save user Defaults

Save Values as User Defaults Save configuration?

[Yes]

[No]

Restore user Defaults

Restore User Defaults Restore User Defaults?

[Yes]

[No]

Launch EFI Shell from filesystem device

WARNING Not Found

[ok]

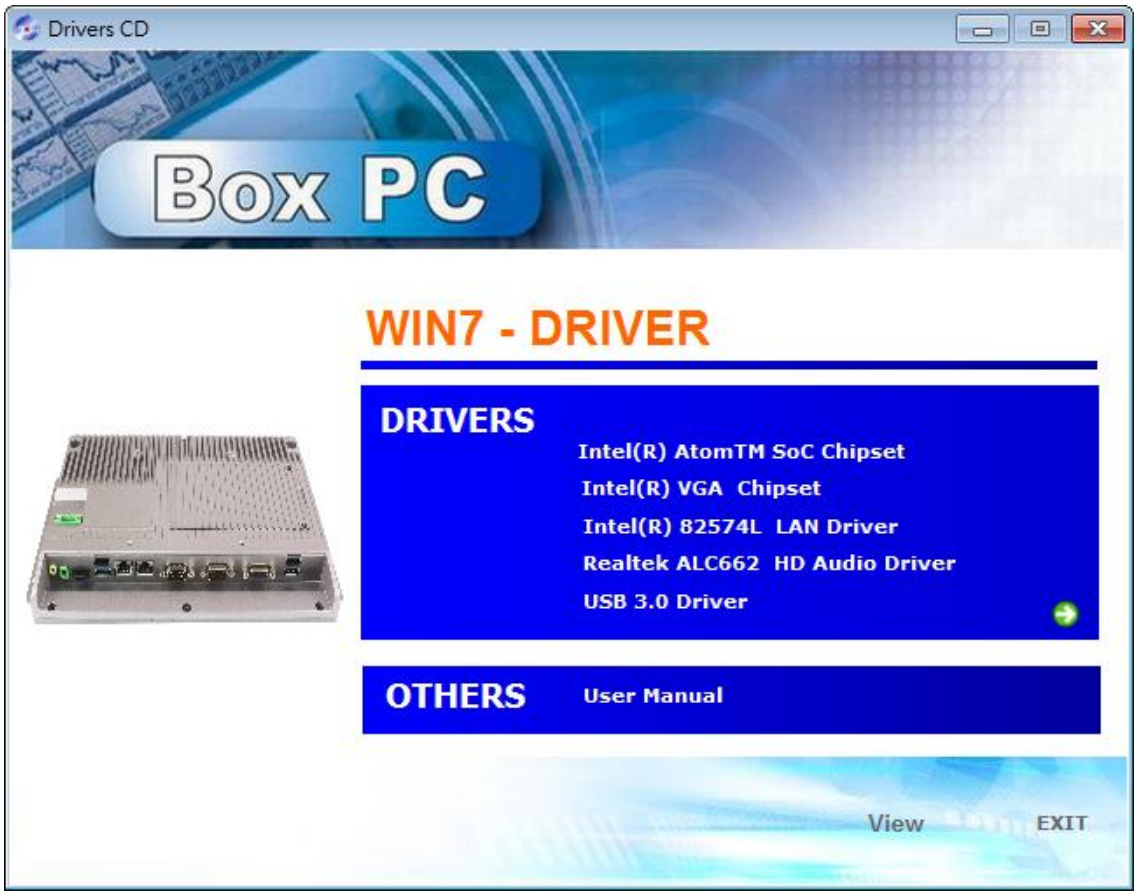
Reset System with ME disable ModeMEUD000

ME will runs into the temporary disable mode, Ignore if ME Ignition FWMEUD001.

Chapter 4 Installation of Drivers

This chapter describes the installation procedures for software and drivers under the windows 7. The software and drivers are included with the motherboard. The contents include **Intel chipset driver, VGA driver, LAN drivers, Audio driver, USB 3.0 Driver Installation instructions are given below.**

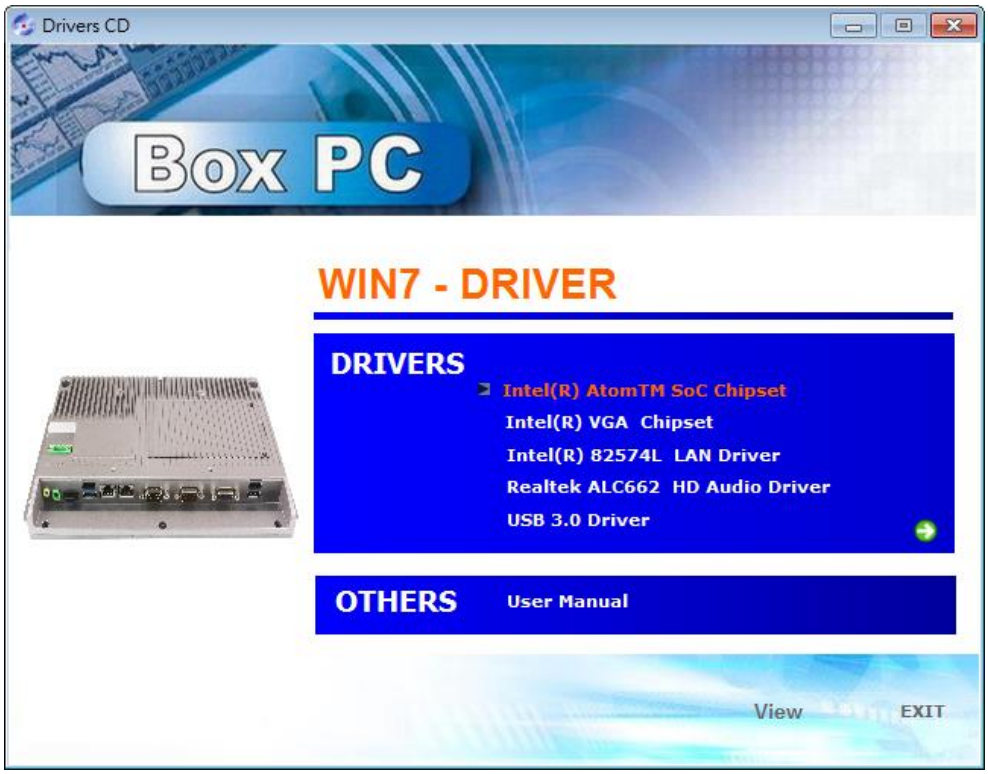
Important Note:
After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.



4.1 Intel(R) AtomTM SoC Chipset

To install the Intel chipset driver, please follow the steps below.

Step 1. Select **Intel (R) AtomTM SoC Chipset** from the list



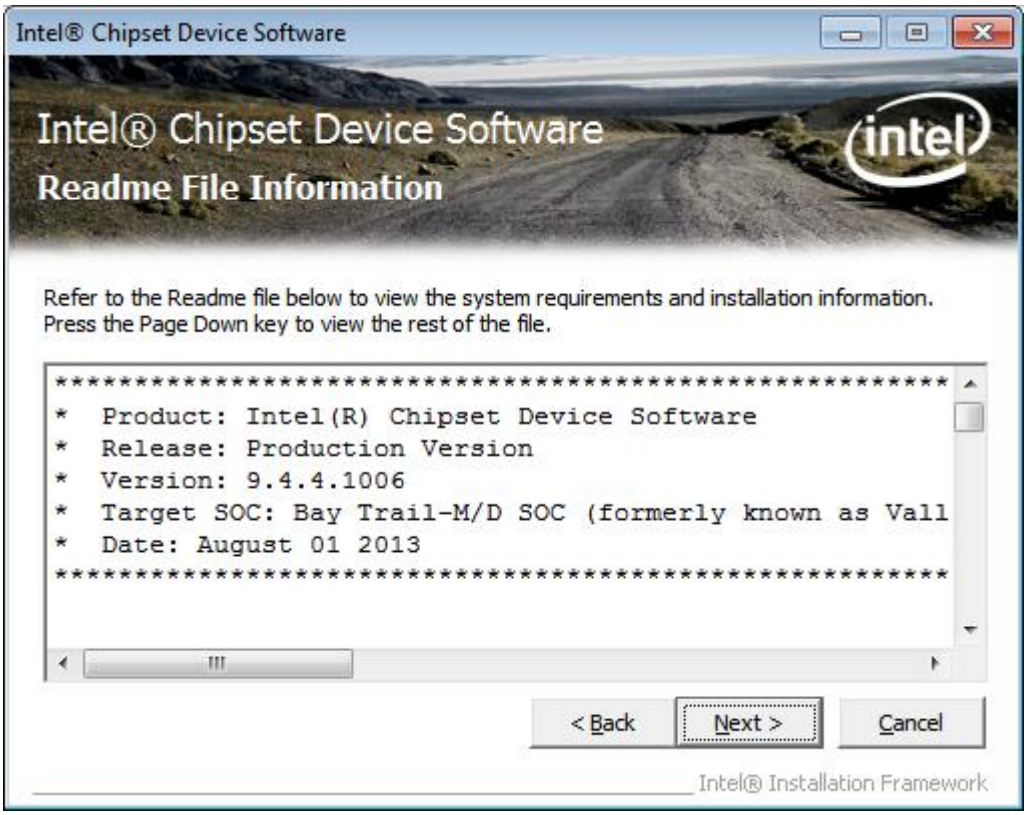
Step 2. Click **Next** to setup program.

Intel® Chipset Device Software
Intel® Chipset Device Software
intel
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

Step 3. Read the license agreement. Click **Yes** to accept all of the terms of the license agreement.

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

Step 4. Click **Next** to continue.


Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
****
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 9.4.4.1006
* Target SOC: Bay Trail-M/D SOC (formerly known as Vall
* Date: August 01 2013
****
< Back
Next >
Cancel
Intel® Installation Framework

Step 5. Click **Next**.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor
Version: 9.4.4.1005
Installing Driver: Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor
Version: 9.4.4.1005
Installing Driver: Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor
Version: 9.4.4.1005
Installing Driver: Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor
Version: 9.4.4.1006
Click Next to continue.
Next
Intel® Installation Framework

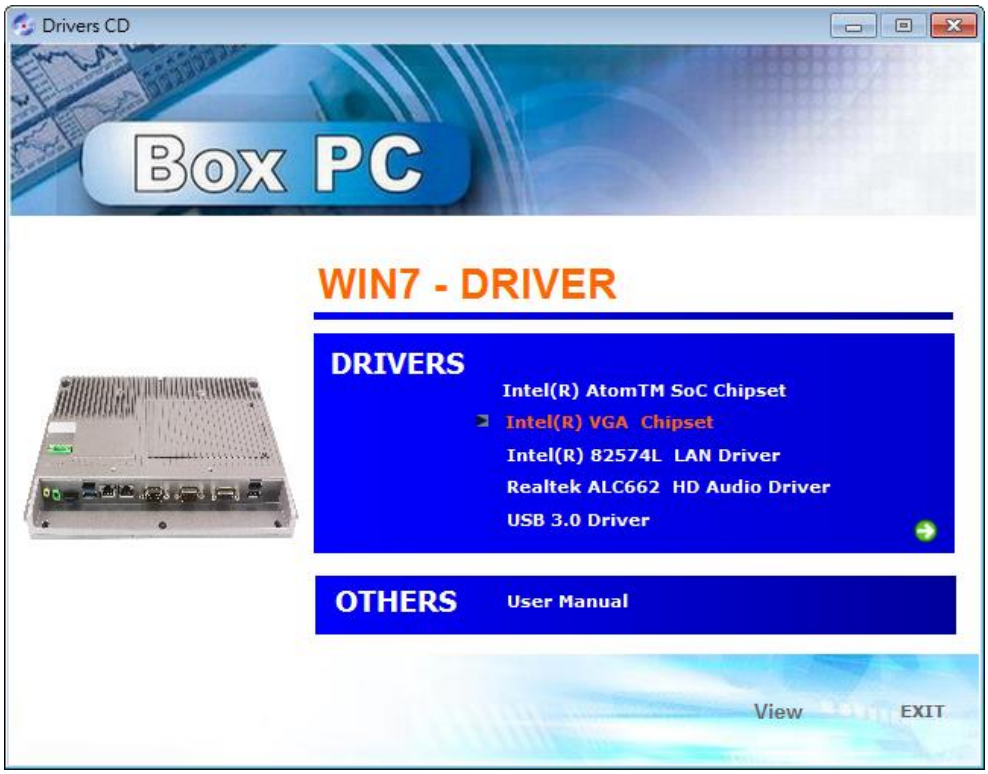
Step 6. Select **Yes, I want to restart this computer now**. Click **Finish**, then remove any installation media from the drives.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

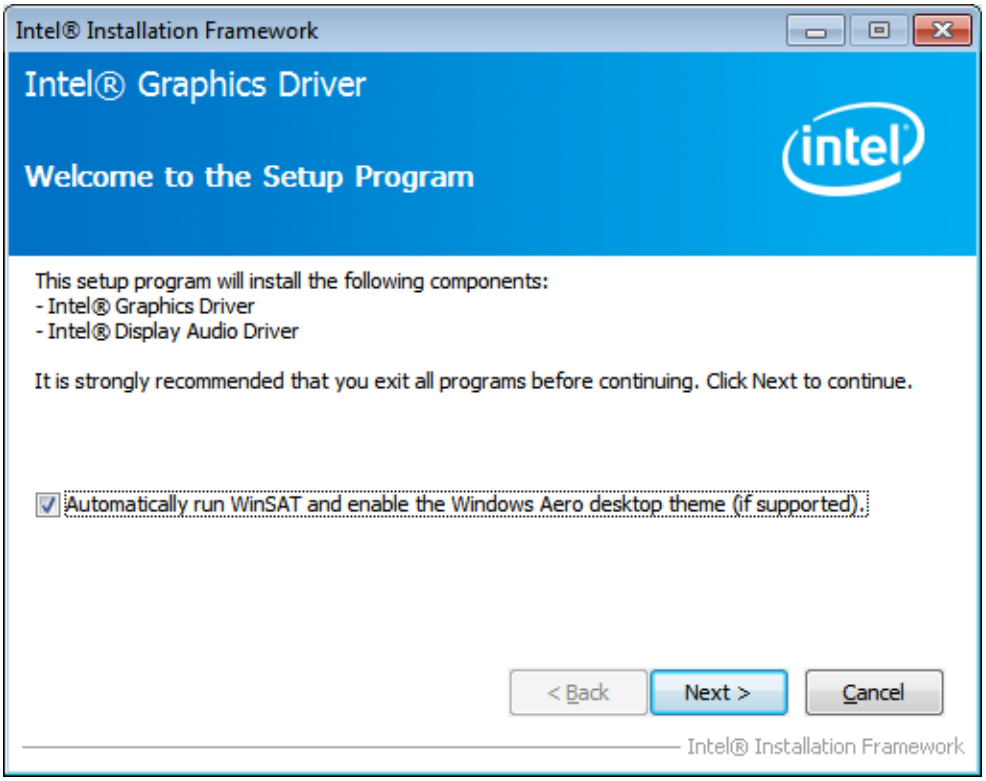
4.2 Intel(R) VGA Chipset

To install the VGA drivers, follow the steps below to proceed with the installation.

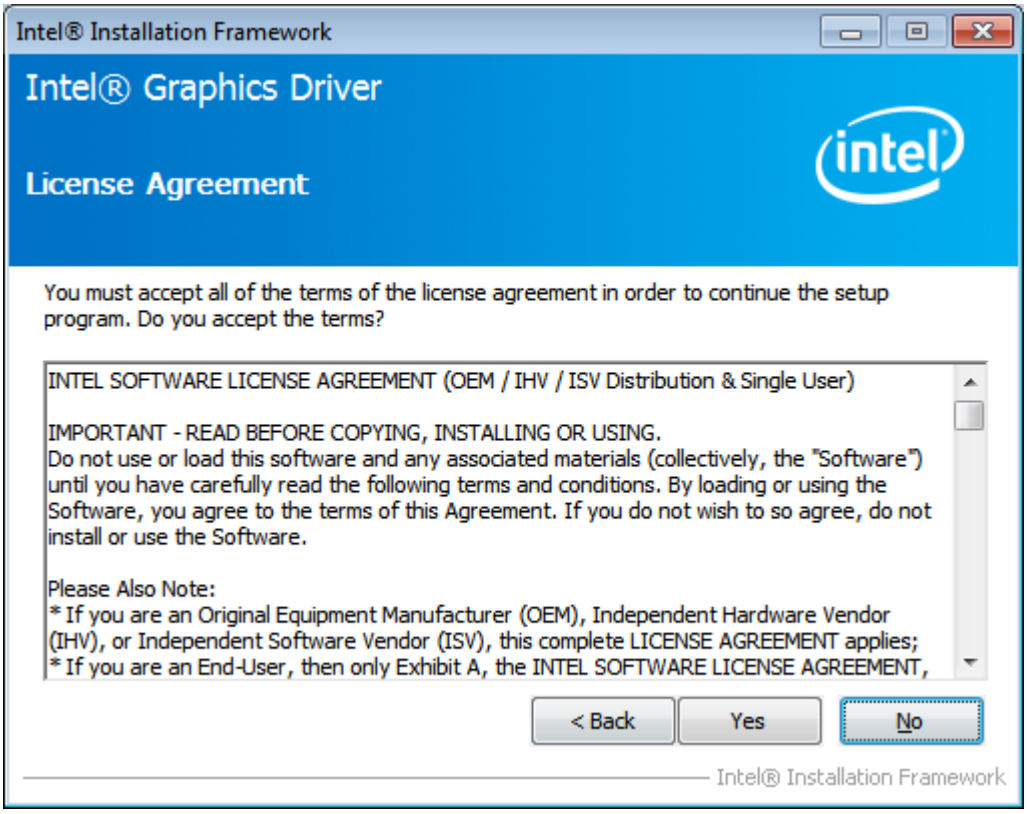
Step 1.Select **Intel(R) VGA Chipset**



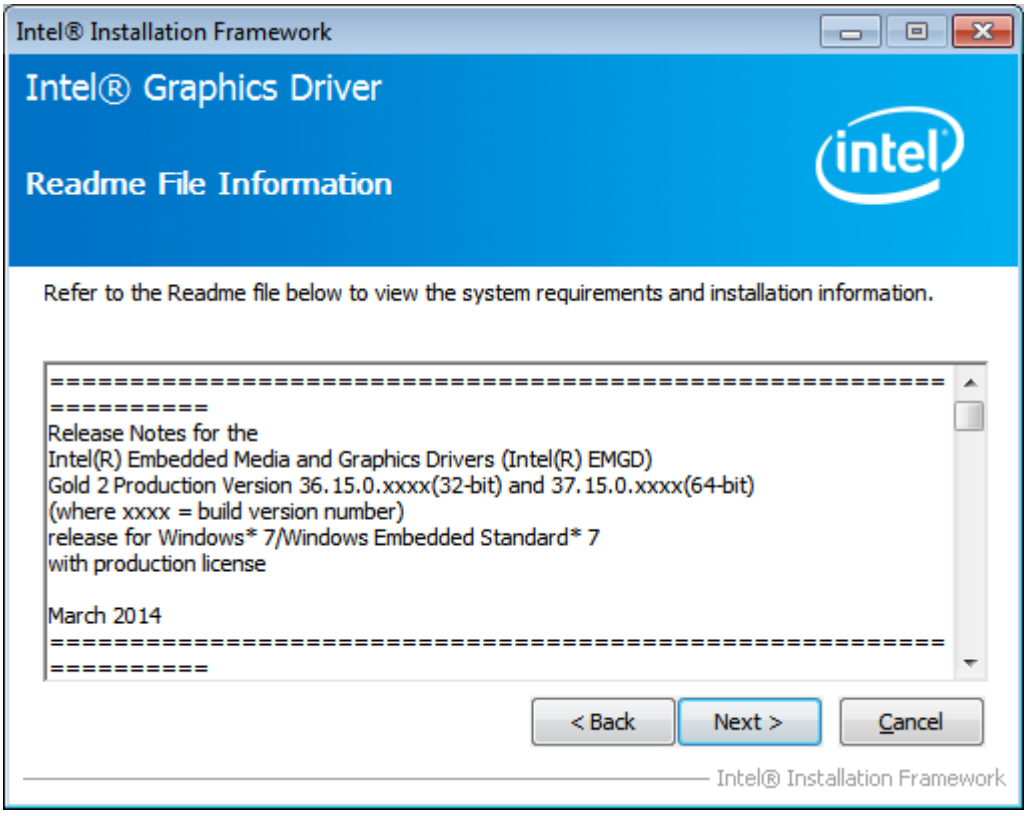
Step 2. Click **Automatically run WinSAT and enable the Windows Aero desktop theme(if supported).** Click **Next.**


Intel® Installation Framework
Intel® Graphics Driver
Welcome to the Setup Program
intel
This setup program will install the following components:
- Intel® Graphics Driver
- Intel® Display Audio Driver
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
Automatically run WinSAT and enable the Windows Aero desktop theme (if supported).
< Back
Next >
Cancel
Intel® Installation Framework

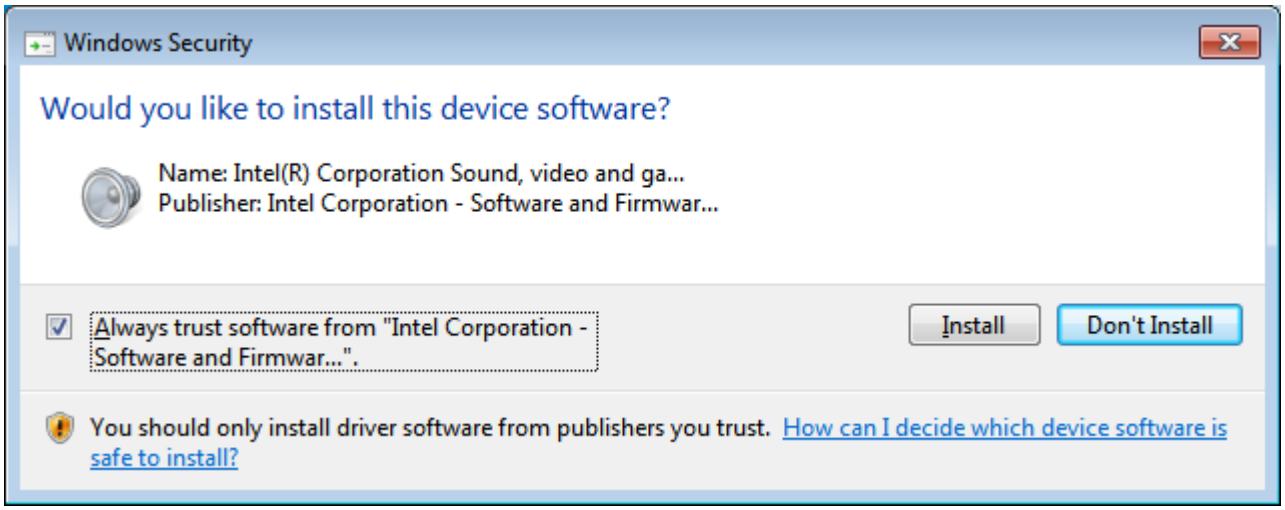
Step 3. Read license agreement. Click **Yes.**


Intel® Installation Framework
Intel® Graphics Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

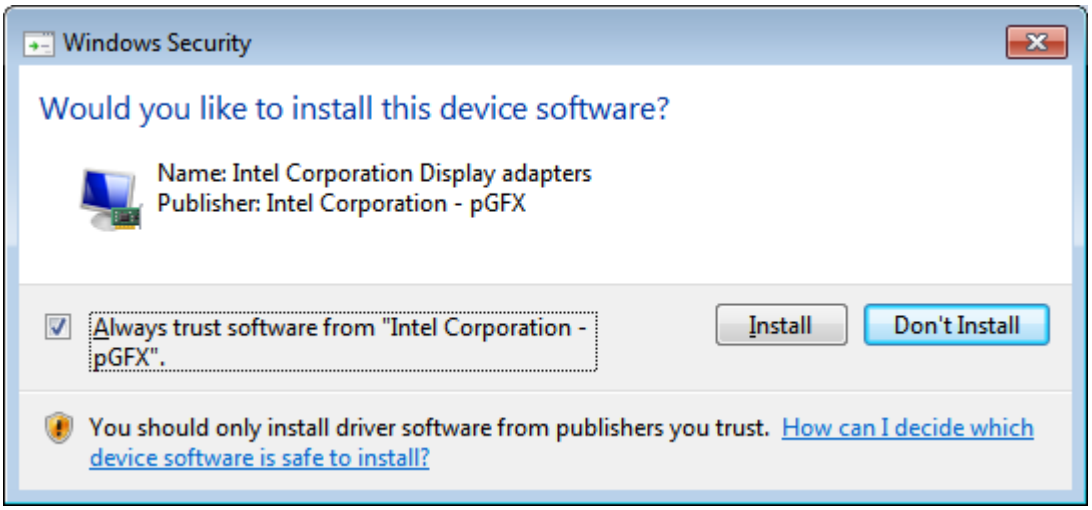
Step 4. Click **Next**.


Intel® Installation Framework
Intel® Graphics Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
==========
Release Notes for the
Intel(R) Embedded Media and Graphics Drivers (Intel(R) EMGD)
Gold 2 Production Version 36.15.0.xxxx(32-bit) and 37.15.0.xxxx(64-bit)
(where xxxx = build version number)
release for Windows* 7/Windows Embedded Standard* 7
with production license
March 2014
==========
< Back
Next >
Cancel
Intel® Installation Framework

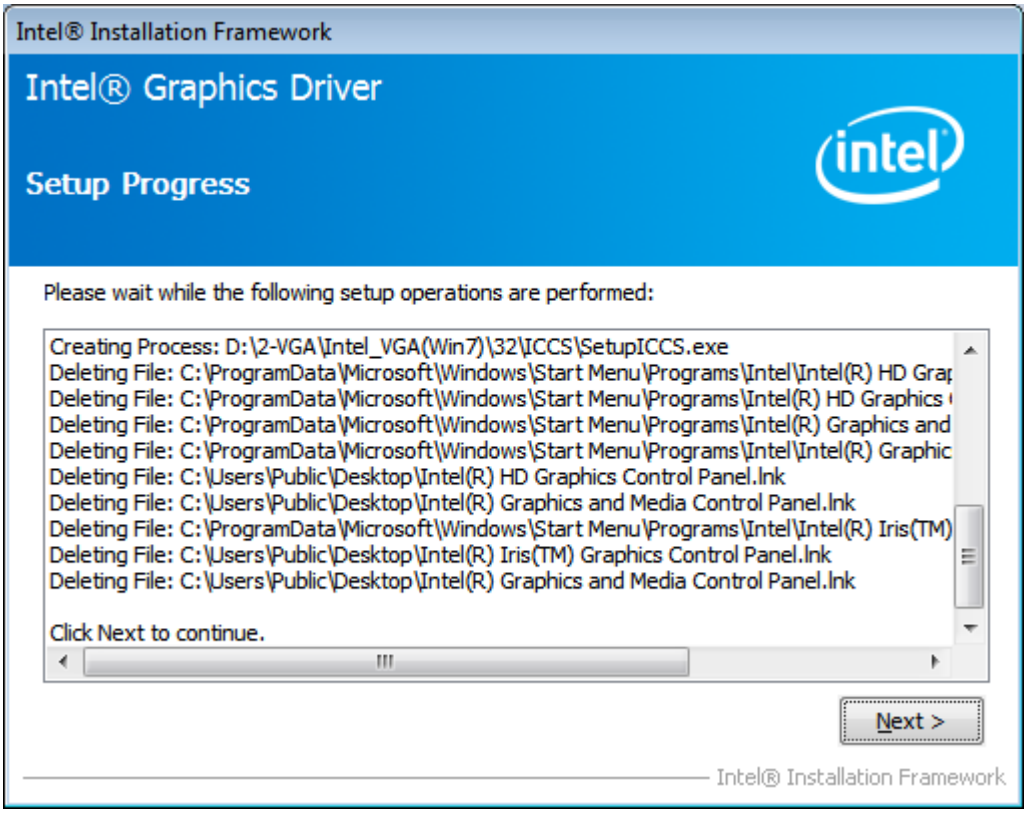
Step 5. Click **Install.**


Windows Security
Would you like to install this device software?
Name: Intel(R) Corporation Sound, video and ga...
Publisher: Intel Corporation - Software and Firmwar...
Always trust software from "Intel Corporation - Software and Firmwar...".
Install
Don't Install
You should only install driver software from publishers you trust. How can I decide which device software is safe to install?

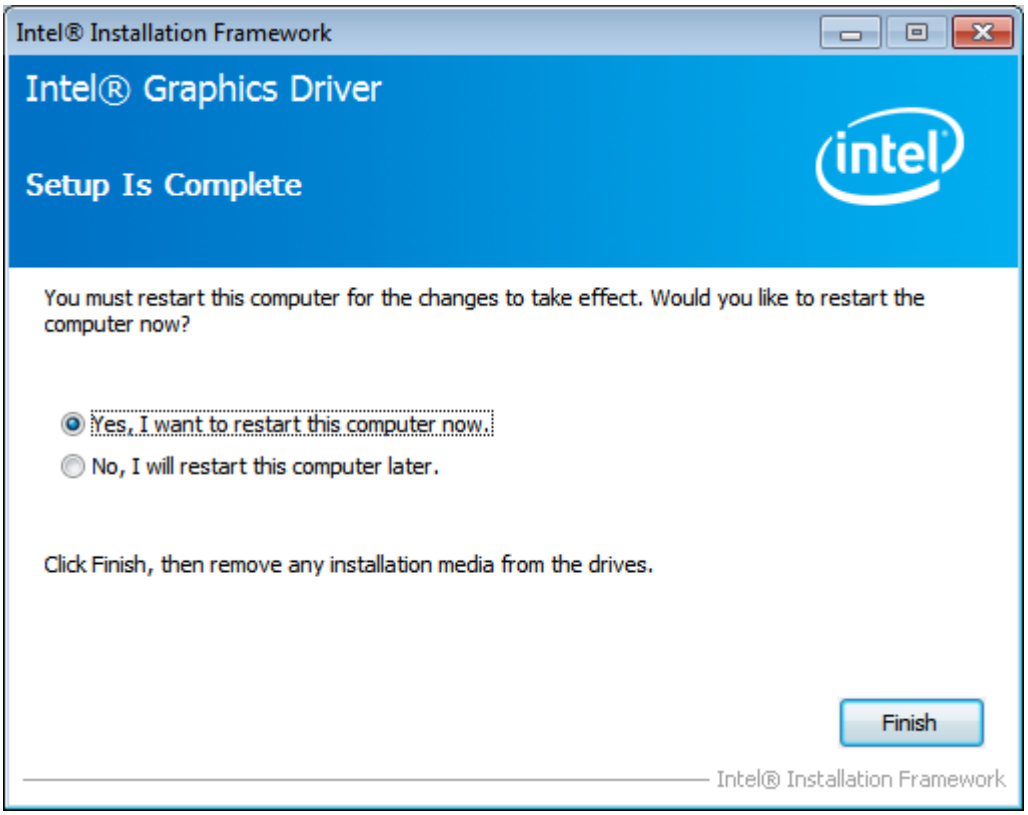
Step 6. Click **Install**.


Windows Security
Would you like to install this device software?
Name: Intel Corporation Display adapters
Publisher: Intel Corporation - pGFX
Always trust software from "Intel Corporation - pGFX".
Install
Don't Install
You should only install driver software from publishers you trust. How can I decide which device software is safe to install?

Step 7. Click **Next.**


Intel® Installation Framework
Intel® Graphics Driver
Setup Progress
Please wait while the following setup operations are performed:
Creating Process: D:\2-VGA\Intel_VGA(Win7)\32\ICCS\SetupICCS.exe
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) HD Grap
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) HD Graphics
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) Graphics and
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Graphic
Deleting File: C:\Users\Public\Desktop\Intel(R) HD Graphics Control Panel.lnk
Deleting File: C:\Users\Public\Desktop\Intel(R) Graphics and Media Control Panel.lnk
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Iris(TM)
Deleting File: C:\Users\Public\Desktop\Intel(R) Iris(TM) Graphics Control Panel.lnk
Deleting File: C:\Users\Public\Desktop\Intel(R) Graphics and Media Control Panel.lnk
Click Next to continue.
Next >
Intel® Installation Framework

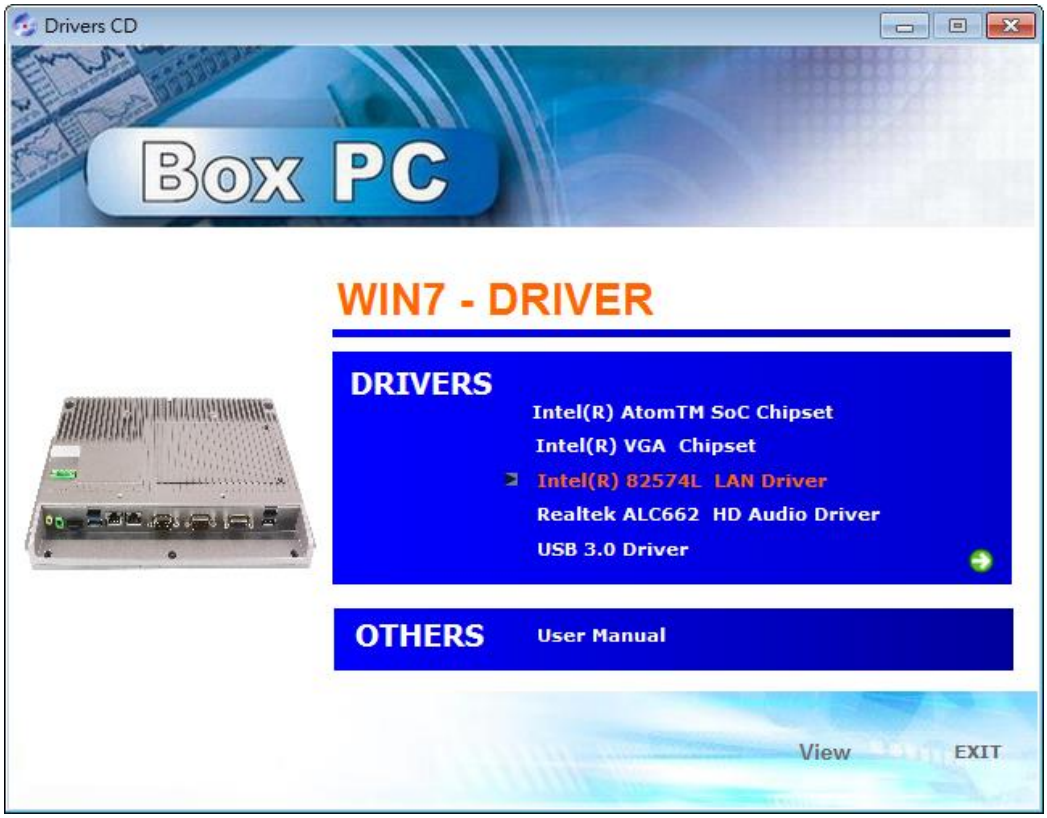
Step 8. Click **Yes, I want to restart this computer now.** Then click **Finish.**


Intel® Installation Framework
Intel® Graphics Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

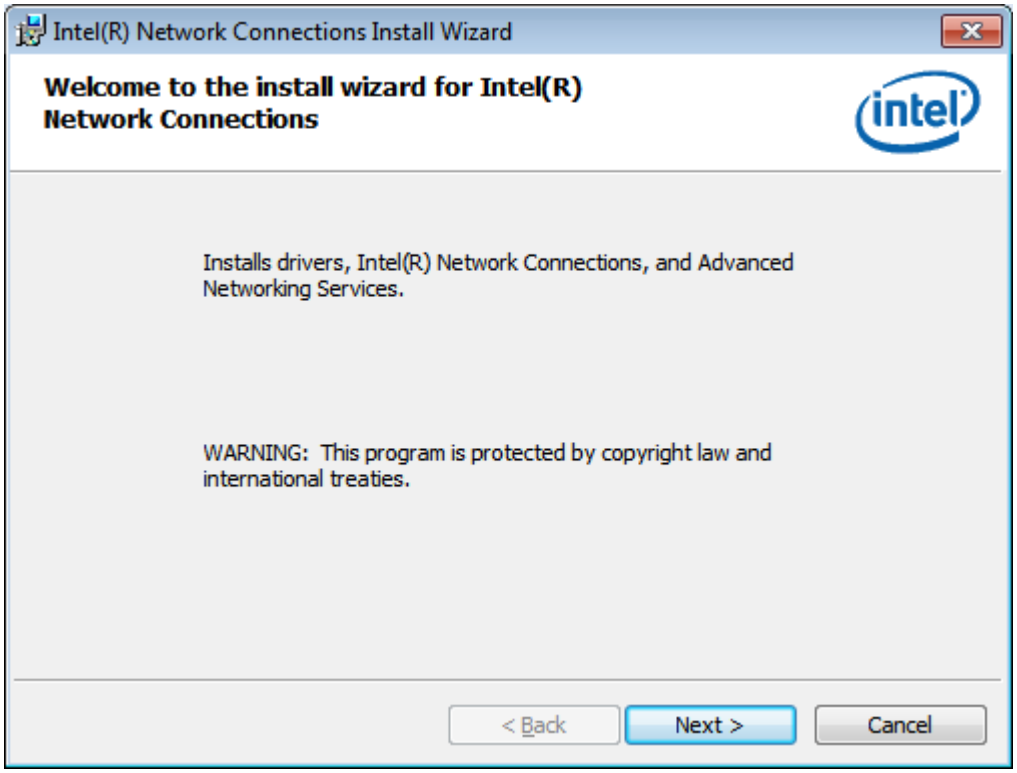
4.3 Intel(R) LAN Driver

To install the Intel (R) LAN driver, please follow the steps below.

Step 1. Select **Intel(R) 82574L LAN Driver** from the list**.**

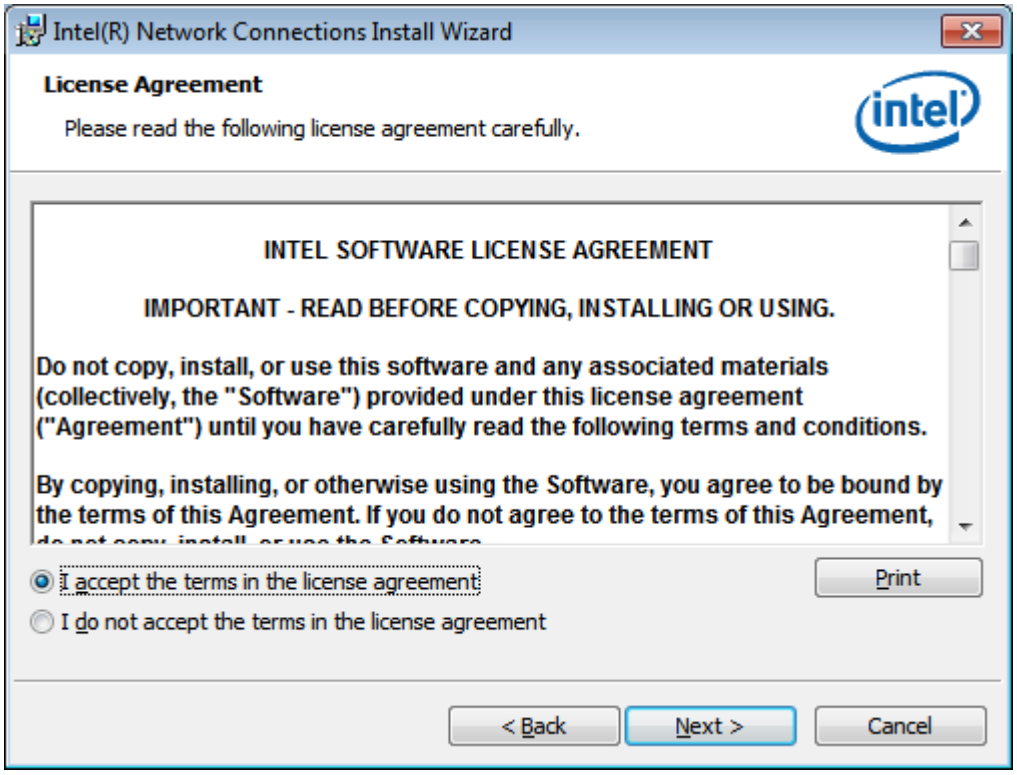


Step 2. . Click **Next.**

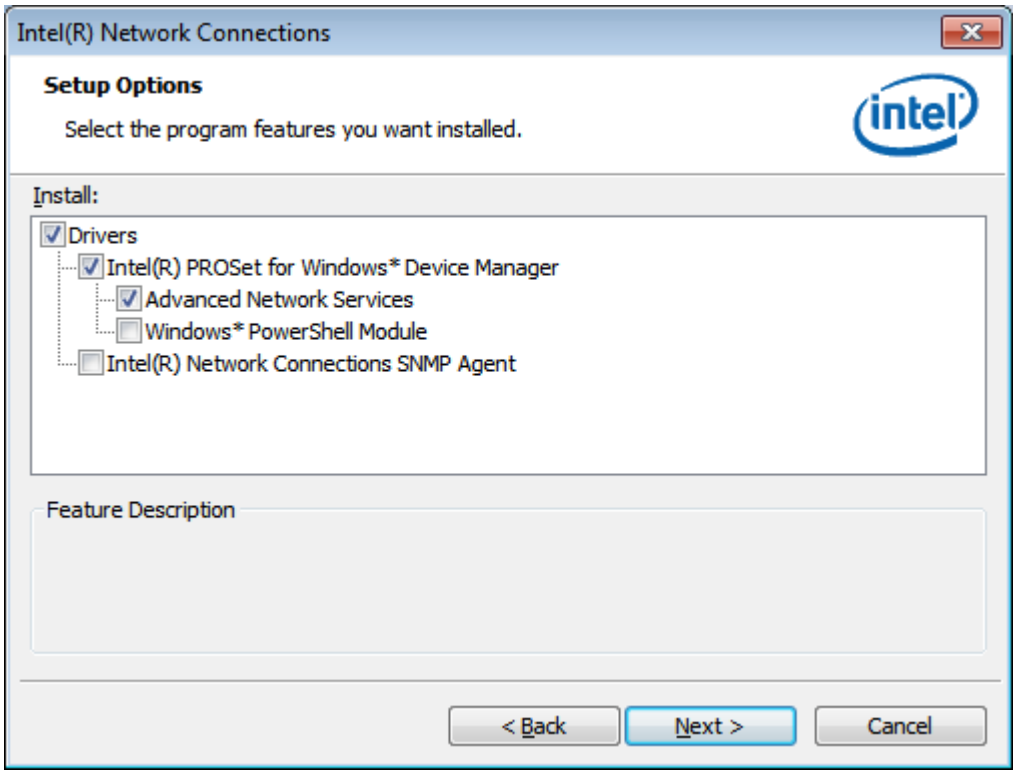

Intel(R) Network Connections Install Wizard
Welcome to the install wizard for Intel(R) Network Connections
intel
Installs drivers, Intel(R) Network Connections, and Advanced Networking Services.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

Step 3. Read license agreement. Click **I accept the terms in the license agreement.**

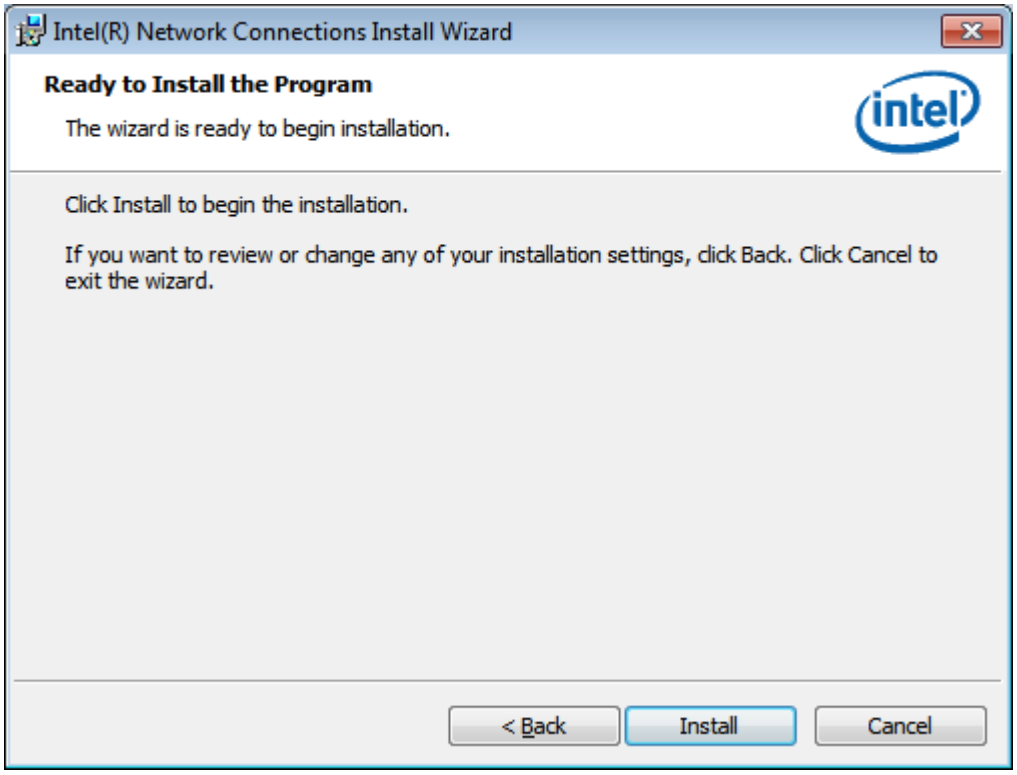
Click **Next.**


Intel(R) Network Connections Install Wizard
License Agreement
Please read the following license agreement carefully.
INTEL SOFTWARE LICENSE AGREEMENT
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not copy, install, or use this software and any associated materials (collectively, the "Software") provided under this license agreement ("Agreement") until you have carefully read the following terms and conditions.
By copying, installing, or otherwise using the Software, you agree to be bound by the terms of this Agreement. If you do not agree to the terms of this Agreement,
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
< Back
Next >
Cancel

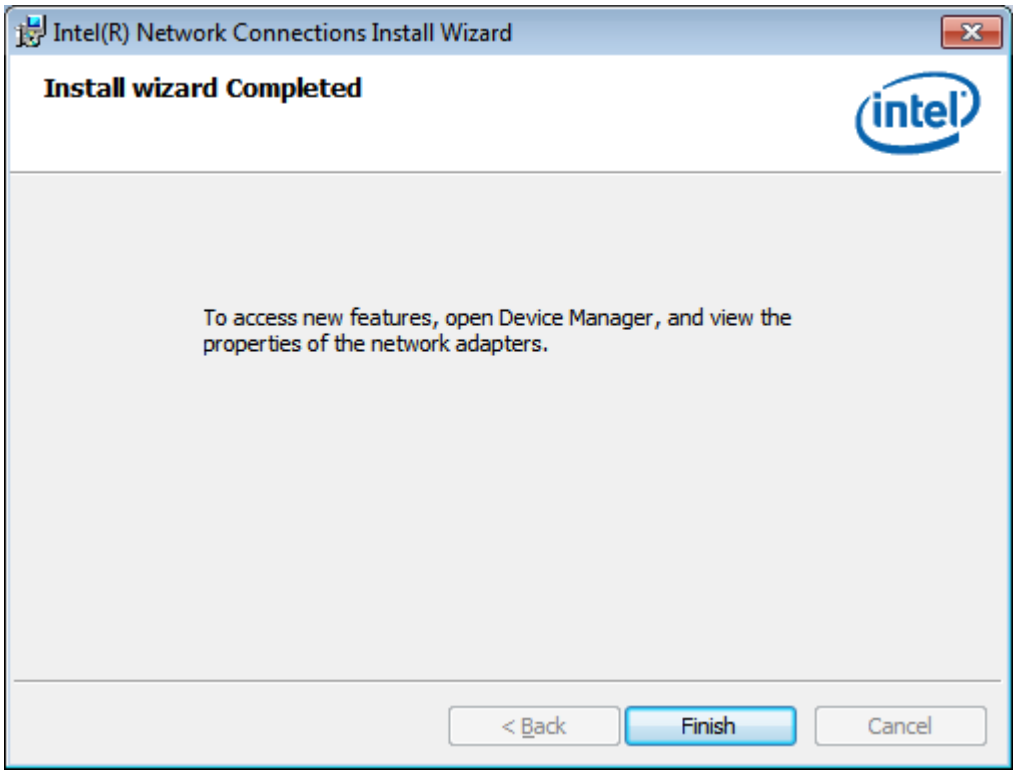
Step 4. Click **Next** to continue.



Step 5. Click **Install** to begin the installation.


Intel(R) Network Connections Install Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
< Back
Install
Cancel

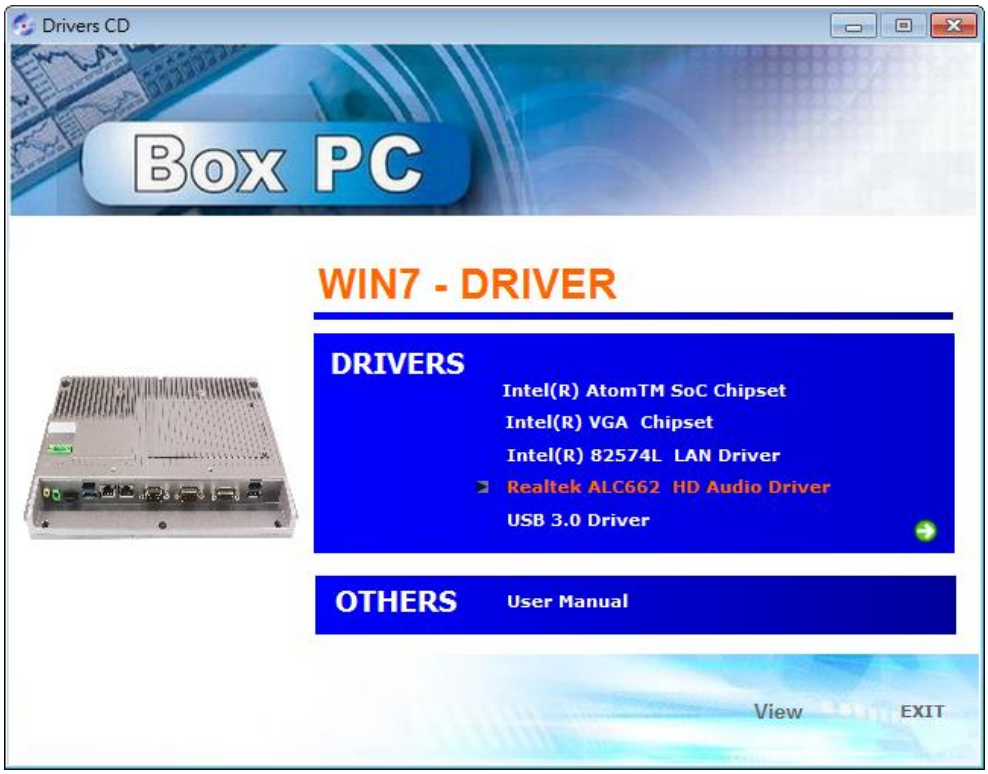
Step 6. Click **Finish** to exit the wizard.


Intel(R) Network Connections Install Wizard
Install wizard Completed
To access new features, open Device Manager, and view the properties of the network adapters.
< Back
Finish
Cancel

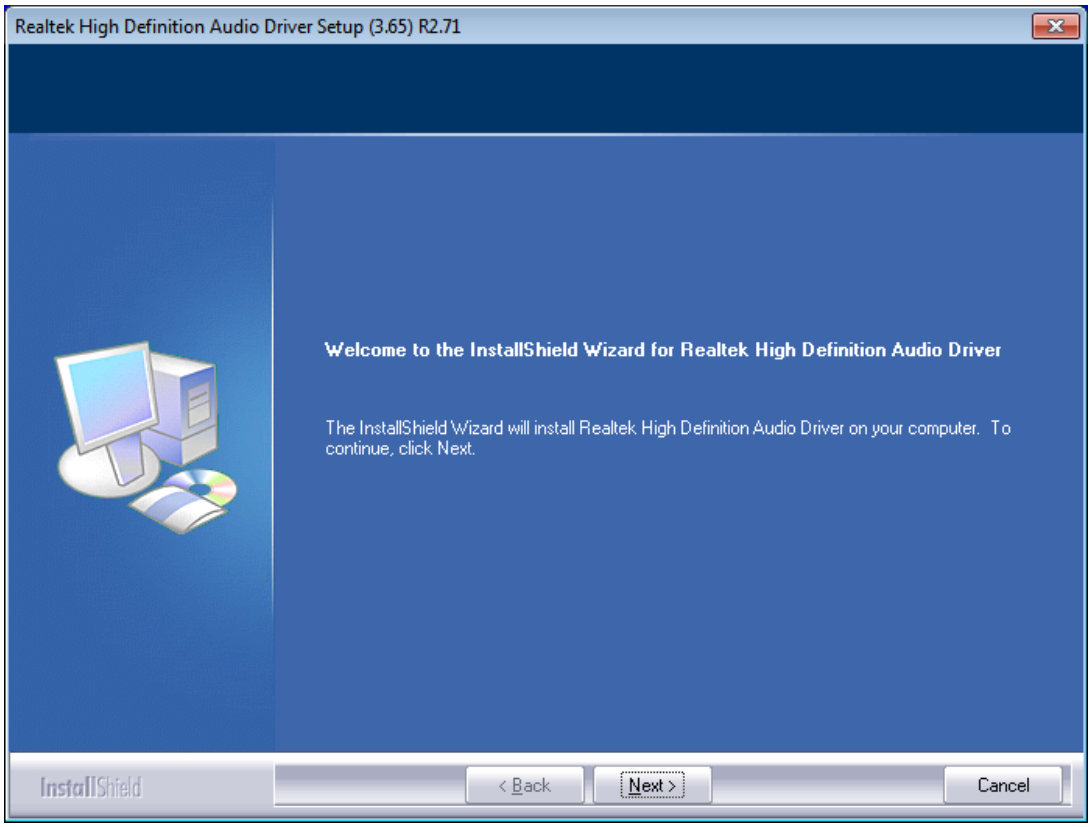
4.4 Realtek ALC662 HD Audio Driver Installation

To install the Realtek ALC662 HD Audio Driver, please follow the steps below.

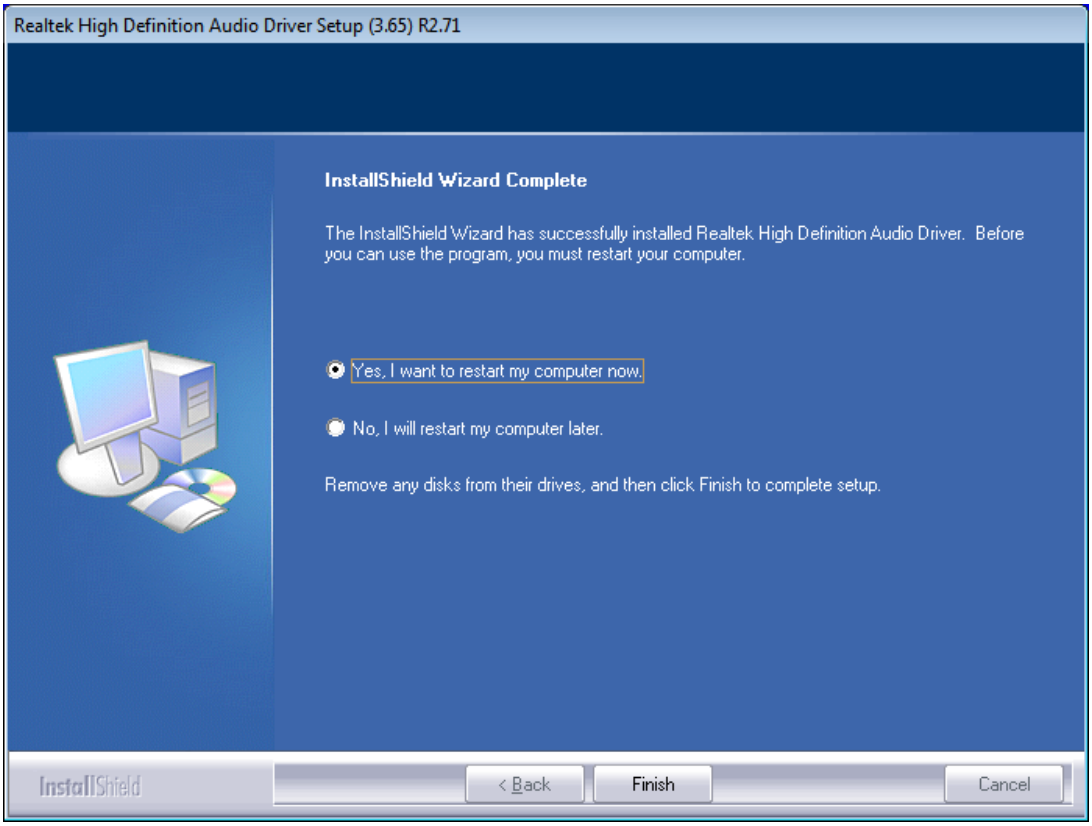
Step 1. Select **Realtek AL662 HD Audio Driver** from the list



Step 2. Click **Next** to continue.


Realtek High Definition Audio Driver Setup (3.65) R2.71
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

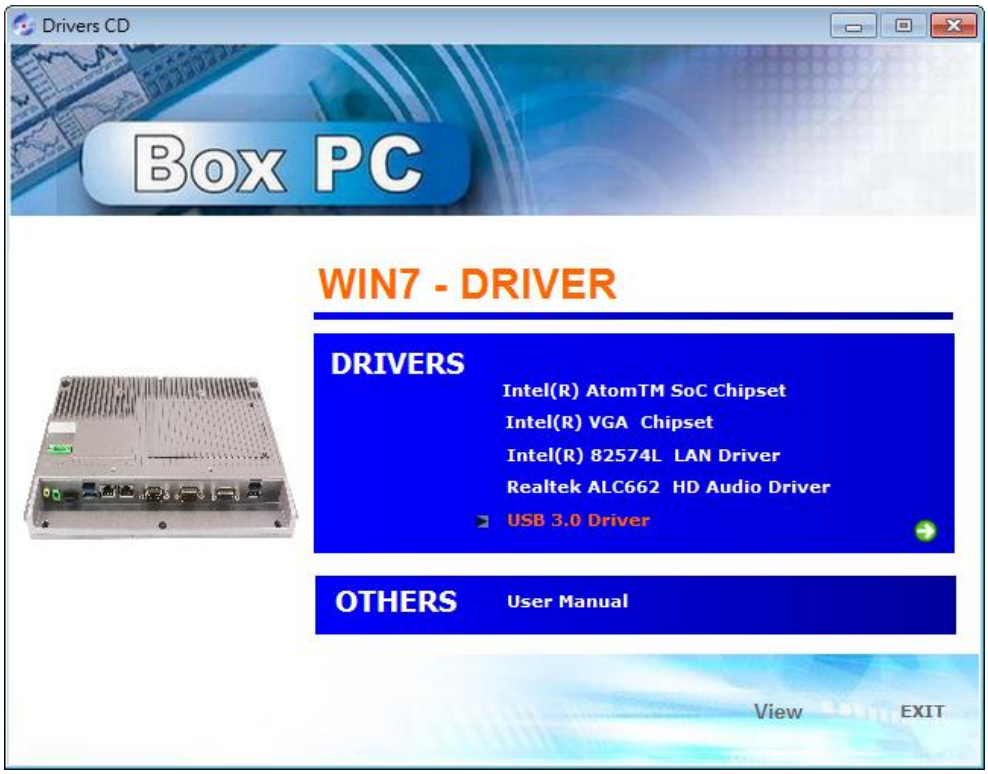
Step 3. Click **Yes, I want to restart my computer now**. Click **Finish** to complete the installation.


Realtek High Definition Audio Driver Setup (3.65) R2.71
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Realtek High Definition Audio Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

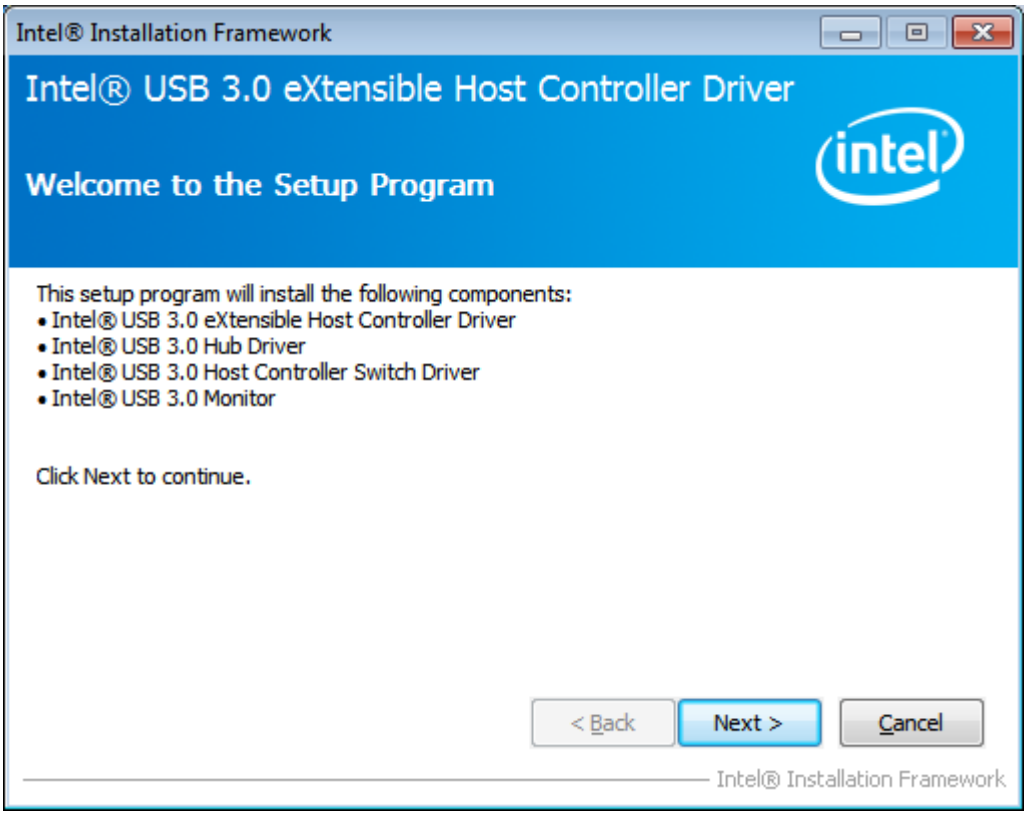
4.5 USB 3.0 Driver

To install the USB 3.0 Driver, please follow the steps below.

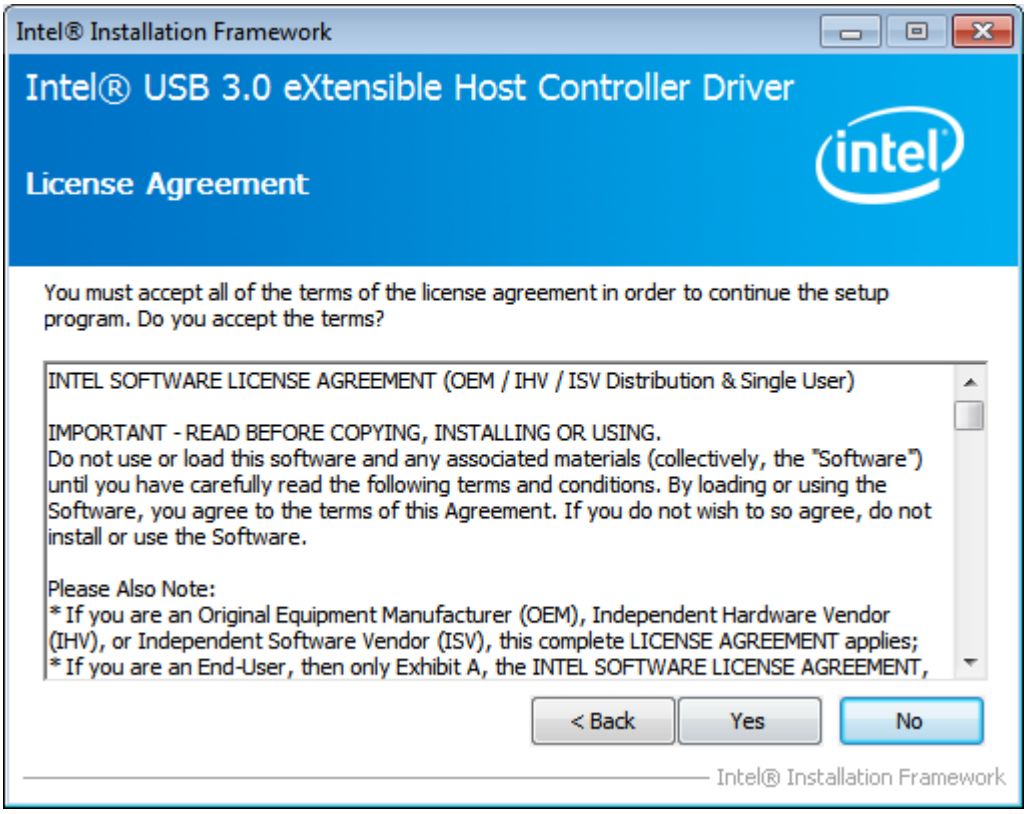
Step 1. Select **USB 3.0 Driver** from the list



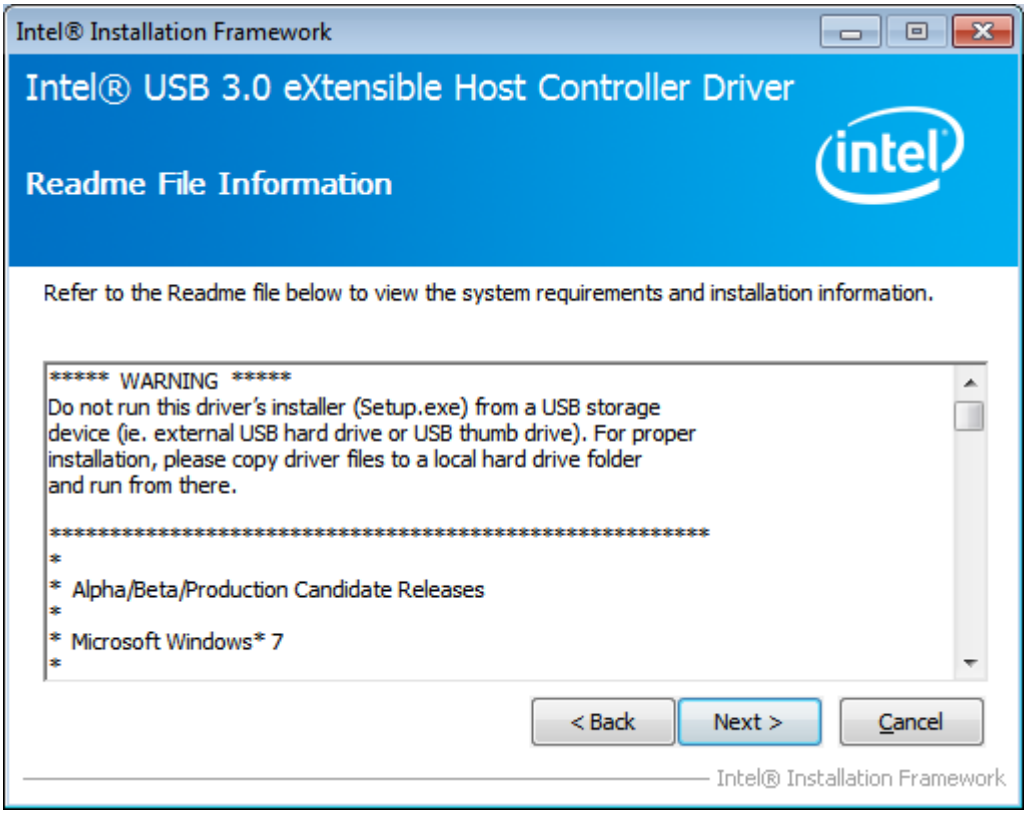
Step 2. Click **Next** to continue.


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
Welcome to the Setup Program
intel
This setup program will install the following components:
• Intel® USB 3.0 eXtensible Host Controller Driver
• Intel® USB 3.0 Hub Driver
• Intel® USB 3.0 Host Controller Switch Driver
• Intel® USB 3.0 Monitor
Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

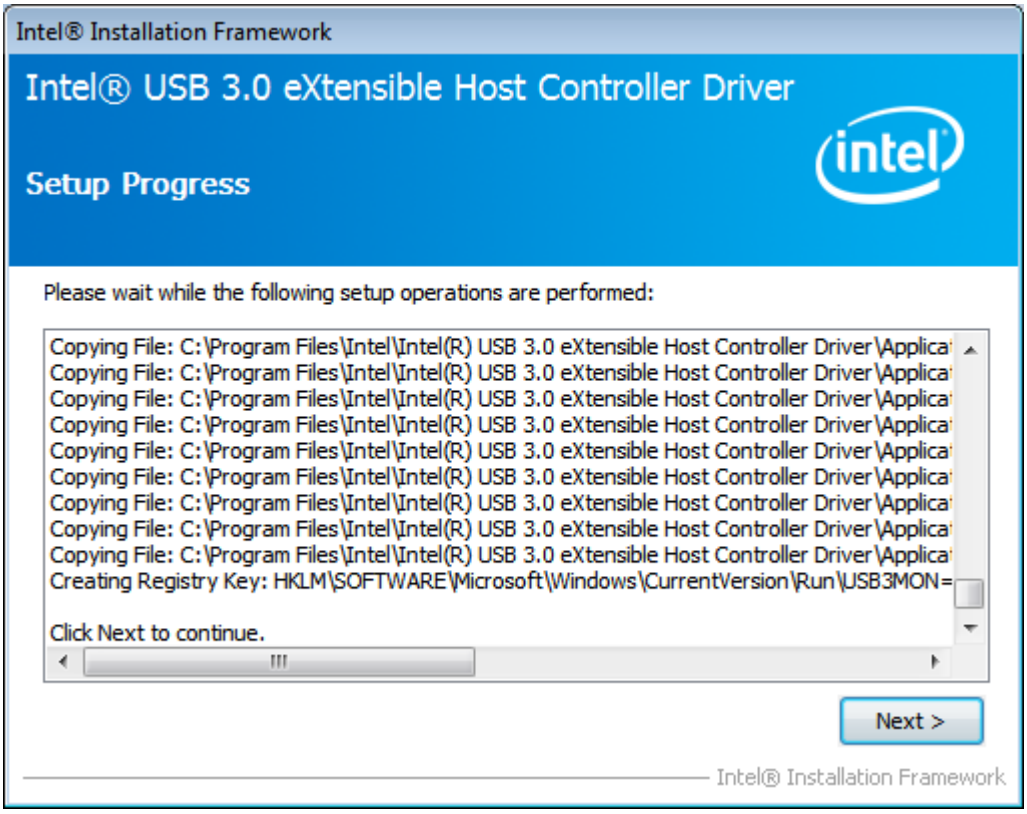
Step 3. Read the license agreement. Then click **Yes** to continue.


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

Step 4. Click **Next** to continue.


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
***** WARNING *****
Do not run this driver's installer (Setup.exe) from a USB storage device (ie. external USB hard drive or USB thumb drive). For proper installation, please copy driver files to a local hard drive folder and run from there.
****
* Alpha/Beta/Production Candidate Releases
* Microsoft Windows* 7
< Back
Next >
Cancel
Intel® Installation Framework

Step 5. Click **Next** to continue.



Step 6. Select **Yes, I want to restart this computer now.** Then click **Finish** to complete the installation.